DOCUMENT RESUME

ED 252 030 EC 171 187

AUTHOR Beling, Dorothy; And Others
TITLE OSEP Funded Field and Student Initiated Research. Final Report, September 1, 1983-August 31, 1984.
INSTITUTION Council for Exceptional Children, Reston, Va.
SPONS AGENCY National Inst. of Education (ED), Washington, DC.
PUB DATE 30 Sep 84
CONTRACT 400-81-0031
NOTE 111p.
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS *Communication Skills; *Disabilities; *Information Dissemination; Research Methodology; Research Projects; *Research Utilization; *Special Education; *Student Evaluation; Synthesis
IDENTIFIERS *Office of Special Education

ABSTRACT

The report reviews results of a project to examine pilot approaches to documenting the contributions of research in improving educational practice. The project abstracted 110 currently funded research projects in progress (to facilitate dissemination to the field), processed final reports of field-initiated and student-initiated research funded by special education programs for the last 5 years, and identified major research areas supported by the U.S. Department of Education's Office of Special Education Programs (OSEP) and synthesized findings in a cumulative analysis. Two research areas, communications and assessment, were selected for special examination and analysis, and two papers ("Communications Research: A Review of Field and Student Initiated Projects Supported by Special Education Programs" by H. Prehm and "Review of SEP Supported Research: Assessment" by J. Gaffney) were developed and are appended. Reviewers' analyses of the papers suggested that assessment of the contributions of research to the evaluation of educational practice should include (1) reviewing research reports, identifying the concepts involved, and noting the developmental state of the concepts within the project; (2) identifying concepts to be evaluated and then determining which concepts are dealt with in specific projects and the evolutionary state of the concept within the project; and (3) tracing the incorporation of practice concepts into textbooks, teaching materials, teacher preparation, and overall educational practice. (CL)

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ED252030

FINAL REPORT

Amendment to ERIC Clearinghouse Contract No. 400-81-0031

OSEP Funded Field and Student Initiated Research

Dorothy Beling
Donald K. Erickson
Janet S. Gaffney
Herbert J. Prehm

Contract Period: 1 September 1983 -- 31 August 1984

EC171187

THE COUNCIL FOR EXCEPTIONAL CHILDREN

30 September 1984

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Introduction

Major elements in the provision of quality educational services to handicapped students are the theory, knowledge, and understanding needed for improving those services. The research base for providing quality education is comprised of research results which establish unequivocal relationships between independent (i.e.instruction, pupil) variables and dependent (i.e.pupil performance measures) variables. By establishing unequivocal relationships between variables, the research community provides those facts upon which educational services can be improved.

The relationship between research and practice is evolutionary and synergistic. The facts upon which instructional procedures can be developed accumulate slowly. While the practicing educator hopes to find THE seminal study which will change current practice, that hope is rarely realized. Rather, the research process accumulates facts in a relatively uncoordinated and disjointed fashion. As research findings accumulate and become more convincing, compelling, and of sufficient scope to translate into useful practices, changes in educational procedures do, in fact, occur.

Because the process is evolutionary and synergistic, the results of individual studies sometimes appear to be unproductive. It is only after thoughtful consideration of the accumulation of a body of knowledge that an evaluation of the contribution of individual studies to that body of knowledge can be made. The results of individual studies rarely, if ever, provide the breakthroughs looked for by practitioners. It is the

accumulation of the total body of literature that provides the direction and insight sought by both practitioners and researchers.

The rate at which knowledge accumulates poses a significant problem for both researchers and practitioners. So much new information is being produced at such a rapid rate that keeping one's self informed of progress becomes difficult. According to Price (1982, p. 12), "If you are in your forties, half of the world's scientific knowledge has been produced since you left school". This generalization about knowledge in general applies to special education as well. The accumulation of knowledge about the education of handicapped children continues to increase at dramatic rates.

Growth of the knowledge base produces a problem for the funders of research, producers, and consumers of research. That problem revolves around questions such as "What do all of these studies show? Does this study address a question that is sufficiently different from those already addressed that it warrants funding? How have the results of this research influenced practice?" For progress in knowledge accumulation to continue, such questions must be answered.

One approach to answering such questions is research synthesis. In recent years, researchers have given increasing attention to questions of how to manage the accumulating data base (e.g. Cooper, 1982; Glass, 1977; Hedges & Stock, 1983; Jackson, 1980; Pillemer & Light, 1980). The collective set of principles and procedures can be called "research integration" or

"research synthesis". The evolving procedures deviate from past practice in conducting literature reviews in that they emphasize approaching the integration task as if it were a primary research task and some apply quantitative methods to the integration of the knowledge base. The rapid expansion of knowledge through primary research requires that increasing attention be given to integrating that knowledge as a basis for policy planning, funding decisions, and advancing the science of teaching handicapped pupils.

The present document reports the results of a special project conducted by the ERIC Clearinghouse on Handicapped and Gifted Children on behalf of the Office of Special Education Programs (U. S. Department of Education). The project was focused on exploring pilot approaches to documenting the contributions of research to improving educational practice.

The Council for Exceptional Children has a long history of working in cooperation with the Department of Education, Special Education Programs (SEP) and SEP's predecessors. Over the years, a number of projects have been carried out by CEC that contributed in various ways to the mission of SEP. In many cases these projects were also funded by SEP; in some cases funding came from other sources.

The ERIC Clearinghouse on Handicapped and Gifted Children is a CEC operated project that has provided information services for over 18 years. During the first eight years of this project's life its funding came totally and exclusively from the Bureau of Education for the Handicapped. In 1974 federal funding for the Clearinghouse was shifted to the National Institute of Education

with CEC assuming responsibility for a significant share of the operation. Since that time, close agency and communication ties have continued to the benefit of OSEP, CEC, and the ERIC Clearinghouse.

The most recent "benefit" to grow out of this relationship was the specialone year project which was attached to the Clearinghouse as an amendment to its FY83-84 contract. Three major activities were included in project.

The first activity involved abstracting 110 currently funded research projects in progress. This task was designed to facilitate SEP dissemination of information which could be shared with the field.

The second activity involved processing, for entry into the ERIC database, final reports of field-initiated and student-initiated research funded by SEP for the last five years. This activity ensures the permanent availability to the education community of the full texts of these reports.

The final activity involved the identification of major research areas that have been supported by SEP and to synthesize their findings and determine their cummulative contribution towards improving educational practice. Two research areas (communication and assessment) were selected for special examination and analysis. The result of this activity was the preparation of two research synthesis papers, one on the topic of Assessment Research and one on Communication Research. These papers are intended to (a) identify the most significant results of the SEP supported research, (b) analyze and interpret these

results, and (c) disseminate these analyses to practitioners in the field. This analysis should also increase the visibility of the contributions of SEP supported research to improving practice.

References

Cooper, H. M. (1982). Scientific guidelines for conducting integrative research reviews. **Review of Educational Research, 52**, 291-302.

Glass, G. (1977). Integrating findings: The meta-analysis of research. **Review of research in education** (Vol. 5), (pp. 351-379). Itasca, IL: F. E. Peacock.

Hedges, L. V., & Stock, W. (1983). The effects of class size: An examination of rival hypotheses. **American Educational Research Journal, 20**, 63-85.

Jackson, G. B. (1980). Methods for integrative reviews. **Review of Educational Research, 50**, 438-460.

Pillemer, D. B., & Light, R. J. (1980). Synthesizing outcomes: How to use research evidence from many studies. **Harvard Educational Review, 50**, 176-195.

Price, D. D. (1982). Scientists and their tools. In D. J. Crump (Ed.), **On the brink of tomorrow: Frontiers of science.** Washington, DC: National Geographic Society.

Procedures

Activity 1

The first activity of the project was intended to provide information for SEP staff to disseminate research project information concerning currently funded field-initiated and student-initiated research in progress. One hundred ten research project applications were abstracted. This work was done by a CEC/ERIC consultant (Ms Carol Lloyd) who has specialized training in both special education and in abstracting and indexing.

This activity involved:

1. Identifying key information items from approved research applications from the student intiated and field initiated research competitions awarded in Fiscal Year 1983.
2. Coding key information items in a form useful to SEP. Information items and codes are provided at the end of this section of the report.
3. Writing a brief abstract of each proposal's purpose and approach.

Activity 1 was completed in 10 weekly one day trips to the OSEP offices.

Activity 2

This activity was designed to provide permanent access by the education community and the public to the final reports of field-initiated and student-initiated research projects funded by SEP. A total of 95 final reports were received from SEP. Of these 95 reports all but 17 were put into the ERIC database. Reasons for rejection of these 17 included the following: (a) the

report was already in ERIC; (b) there was a close duplicate document already in ERIC (i.e. more complete or more recent information on the project had already been submitted); (c) two or more closely related reports were combined into a single document with the result that one of the two was counted as rejected;(d) project personnel were unable to obtain a copy of the report with print of sufficient quality for reproduction and distribution by the ERIC system;(e) the content quality of the report was not up to ERIC standards.

The actual processing and input of documents into the ERIC system involved a number of steps listed in the Input Flow Chart attached to this section. These included:

1. Accessioning the document
2. Checking for duplicates
3. Maintaining the Acquisitions Data Report form
4. Obtaining copyright releases when necessary
5. Cataloging
6. Abstracting and indexing
7. Keying the document resume for online transmission
8. Coordinating transmission with the ERIC facility
9. Shipping documents to the ERIC facility

All processing activities must be coordinated to flow smoothly with enough time for careful quality control at every step. Cataloging requires strict attention to detail so that all important bibliographic data are captured. For maximum cataloging efficiency and consistency all documents are cataloged by one person whose ten years of cataloging experience produces

high quality and efficient cataloging.

Abstracting and indexing require subject matter knowledge, writing ability and specific abstracting/indexing skills. Accuracy is the most important quality looked for in the abstract, followed by comprehensiveness. The Clearinghouse encourages abstractors to write abstracts whose length fairly represents the amount of content in the original document without exceeding 200 words.

Indexing is the key to subject retrieval. A forgotten descriptor will result in a user not retrieving a relevant document. An inappropriate descriptor will result in a disappointed user. All indexing is done by the abstractors, including the assignment of publication type codes and target audience.

For this project all abstracting and indexing of the final reports was done by experienced Clearinghouse personnel with a final review of all output done by the Clearinghouse Associate Director for Database Operations. This review always includes comparison of the abstract with the original document. This editing process also looks at general writing style, grammar, spelling, and punctuation. Since we know that users place a high value on an ERIC abstract, all abstracting and editing efforts are designed to meet the user's needs and expectations.

Activity 3

Activity 3 focused on the identification of research areas, at least one of which, could be examined to attempt to determine the contributions of research within that area to educational practice. Titles and abstracts of the 78 projects selected for

insertion into the ERIC database were reviewed by Dorothy Beling and Herbert J. Prehm. Based on their review, concensus regarding the identification of potential project clusters was achieved. Three clusters of projects were identified:

1. assessment projects (18 reports).
2. communications research projects (18 reports).
3. mainstreaming projects (10 reports).

Because of their numbers, assessment and communications research projects were selected for review.

Projects which were not selected for review were coded for information pertaining to (a) their funding year, (b) type of grant, (c) grant period, (d) project dissemination, and (e) subjects serving in the project. Data for each of these variables were tabulated and is reported in Appendix A. Subsequent to coding, projects were delivered to the ERIC Clearinghouse. Projects selected for review and synthesis were read by either Janet S. Gaffney (assessment) or Herbert J. Prehm (communications). The procedures used for each of the reviews and the outcomes of those reviews are described in detail in Appendices B and C.

The completed research reviews were duplicated and disseminated to the following reviewers:

Dr. Phil Cartwright, Professor
Pennsylvania State University

Dr. Mary Kay Dykes, Professor
University of Florida

Dr. Mary Beth Fafard, Special Assistant
New York Public Schools

Dr. Roberta Felker, Professor

Marymount College

Dr. Richard Gallow, Executive Director
National Association of State Directors of Special Education

Dr. James Ysseldyke, Professor
University of Minnesota

Each reviewer read the papers included in Appendices A, B, and C and attended a meeting at CEC headquarters in Reston, Virginia on 7 September 1984. In addition to the persons listed above, the Reston meeting was attended by Mr. Kevin Arundel (NIE), Ms. Dorothy Beling, Dr. Donald K. Erickson (project director), Dr. Jan Gaffney, and Dr. Marty Kaufman (SEP).

Conclusions

The purpose of the meeting was to discuss approaches to assessing the contributions of research to educational practice in the light of the appended documents. Following a day of intense discussion, the following conclusions were drawn:

1. Identifcation of the contributions of research to educational practice is an extremely complex task involving projects funded by SEP, the broader research literature, teacher training programs, textbook publishers, and educational practitioners and administrators.
2. While areas of research focused on a broad, general topic can be identified, the numbers of studies within those areas which focus on a particular question are insufficient to complete a real synthesis. Because studies within areas focus on a variety of topics, development of a meaningful synthesis is virtually impossible.

3. Concepts (e.g. task analysis, individualization, etc.) which have evolved from the synergy of research and practice can be identified. Evolution of those concepts through research can be traced by either (a) reviewing research reports and identifying the concepts involved in that research and noting the developmental state of the concepts within the project or (b) identifying concepts to be evaluated and then determining which of those concepts are dealt with in specific projects and the evolutionary state of the concept within the project.

4. Assessment of the contributions of research to the evolution of educational practice should include both approaches described in 3 above as well as additional approaches involving the tracing of how the educational practice concepts have been incorporated into textbooks, teaching materials, teacher preparation, and overall educational practice. Inclusion of these additional approaches requires a restrospective analysis of the contribution of the concept to practice by knowledgable practioners, administrators, teacher educators, textbook publishers, researchers, and others.

5. This pilot project was very useful in providing project staff with information crucial to identifying maximally useful approaches to documenting the contributions of research to practice.

Dissemination

The results of this project will be disseminated in two ways. The synthesis papers prepared by Janet Gaffney and Herbert Prehm will be submitted to ERIC for possible inclusion in the ERIC database. Secondly, a summary paper focused on the data coded across all projects will be submitted to **Exceptional Children** for review and possible publication in that journal.

CODING CATEGORIES

PROJECT DESCRIPTION FORM

AWARD TYPE

1 - Grant
2 - Cooperative Agreement
3 - Competitive Contract
4 - Sole Source Contract
5 - Jointly Funded

PROJECT TYPE

1 - Research
2 - Model Demonstration
3 - Evaluation
4 - Development
5 - Technical Assistance
6 - Training
7 - Dissemination or Marketing
8 - Educational Service

CONTENT

01 - Assessment (referral, screening, diagnosis, child identification, eligibility)
02 - IEP
03 - LRE
04 - Procedural Safeguards (due process, nondiscriminatory assessment)
05 - Finance
06 - Service Delivery Systems
07 - Pupil Outcomes
08 - Vocational Education (career education, school-to-work transition)
09 - Physical Education & Recreation (leisure education)
10 - Arts
11 - Technology (prostheses, computers, CAI)
12 - Nonvocal Communication (communication aids, signing)
13 - Literature Reviews (research integration)
14 - Instruction (curriculum, learning strategies, behavioral techniques, tutoring, teacher behavior)
15 - Personal Characteristics (of child, of teacher, of parent)
16 - Social Skills (social competence)
17 - Language (structure, development)
18 - Subject Matter (math, science, reading, geography, etc.)
19 - Attitudes
20 - Accessibility
21 - Related Services (speech, OT, PT, medical therapy, psychological therapy)
22 - Parents
23 - Teacher Training
24 - Software

AGE

1 - Infancy
2 - Preschool
3 - Elementary
4 - Secondary
5 - Post-Secondary
6 - All Ages (or age not relevant)

HANDICAP

01 - Mentally Retarded
02 - Learning Disabled
03 - Seriously Emotionally Disturbed
04 - Speech Impaired
05 - Deaf
06 - Hard of Hearing
07 - Visually Handicapped
08 - Other Health Impaired (incl. autistic)
09 - Orthopedically Handicapped
10 - Multihandicapped
11 - Deaf-Blind
12 - Cross Categorical
13 - Noncategorical (or category not relevant)

SEVERITY

1 - Mild
2 - Moderate
3 - Severe
4 - Profound
5 - Cross Severities
6 - Severity Not Relevant

GEOGRAPHY

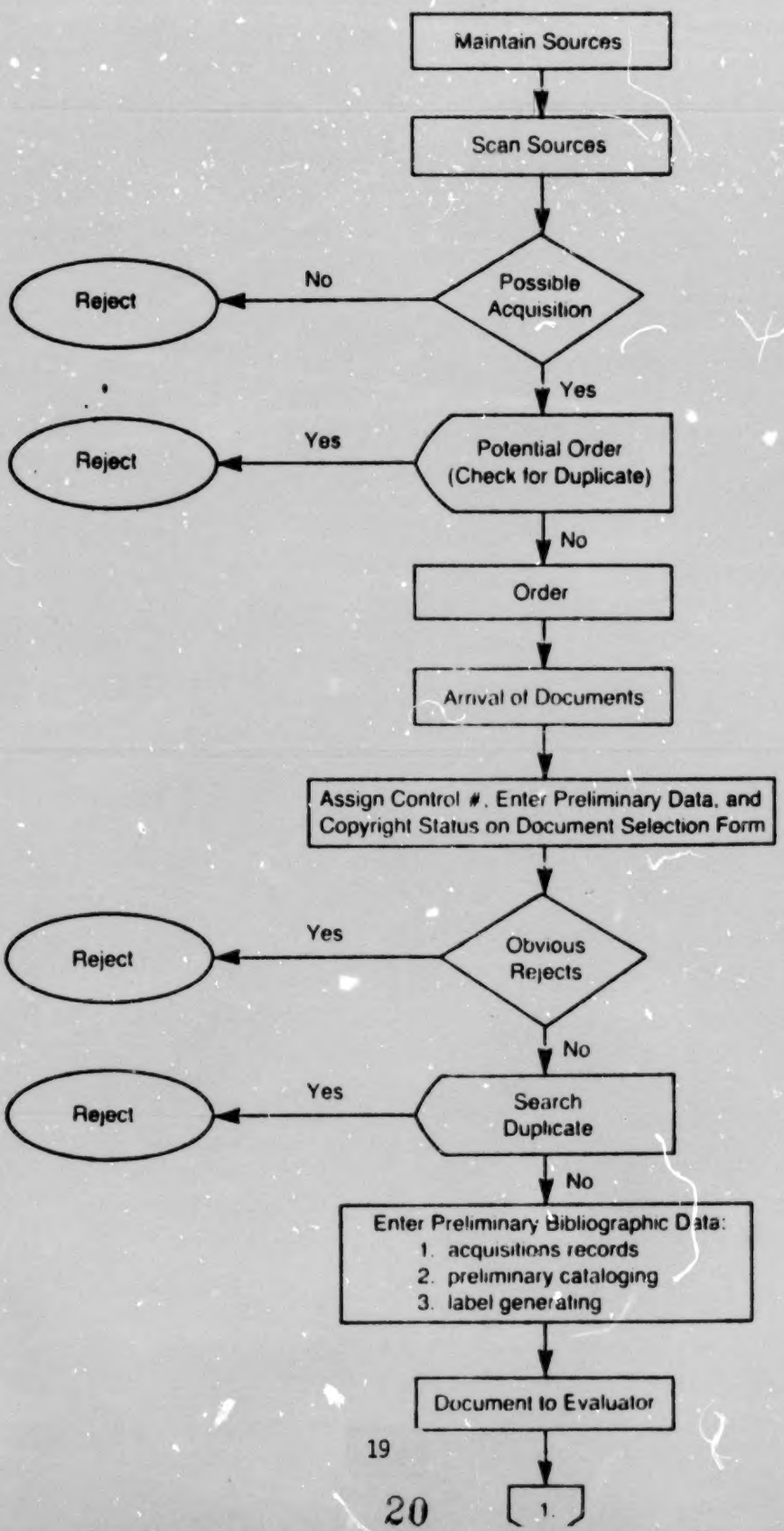
1 - Urban
2 - Suburban
3 - Rural
4 - Not Relevant

PRODUCT AUDIENCE

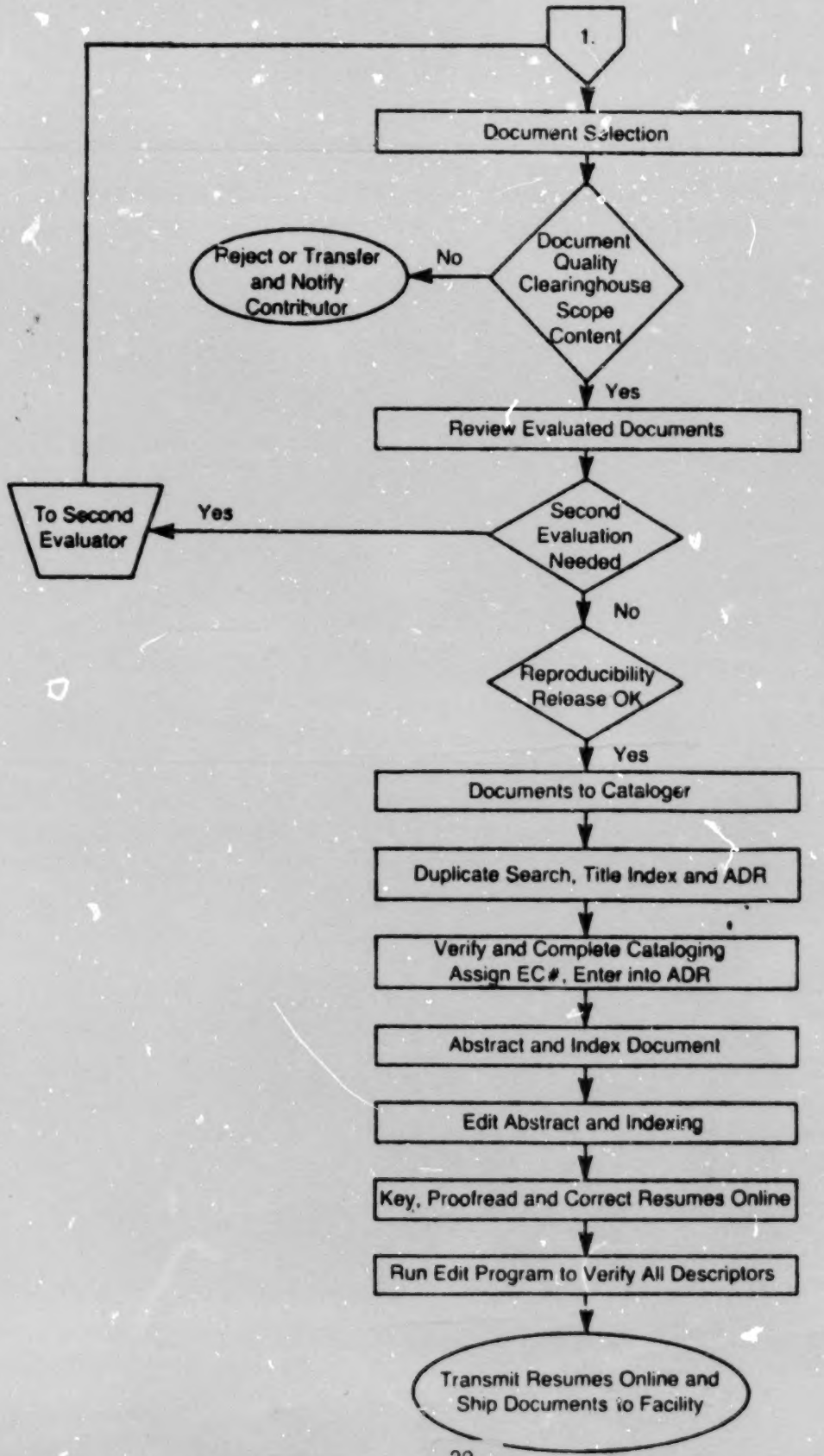
01 - Other Research Investigators
02 - Teachers
03 - Administrators
04 - Parents
05 - Children
06 - Related Services Personnel
07 - Teacher Trainers
08 - Instructional Developers
09 - Technical Assistance Providers
10 - Other Community or State Service Agencies
11 - Policy Makers (legislators, state board members)
12 - Professional Associations
13 - Parent Groups
14 - Business Community
15 - General Public
16 - Manufacturers and Publishers

Attachment 2

INPUT FLOW CHART
(Acquisitions, Selection, Processing)



Attachment 2



Appendix A

Projects Coded but not Reviewed

Projects Coded but not Reviewed

A total of 38 projects were coded but not reviewed. Tabulations of data from these projects are presented in Tables 1 through 3. Table 1 reports data regarding funding year, grant period, and grant type. Caution should be exercised in interpreting the data. Funding year could be either the year the original grant was funded or the year that a continuation request

Table 1

Project Funding Year, Grant Period, and Type

Variable	f
Funding Year	
1982	1
1981	12
1980	8
1979	8
1978	5
1977	1
1976	2
No Report	1
	38
Grant Period	
3 Years	8
2 Years	1
1 Year	3
Duration not reported	36
	38
Grant Type	
Field Initiated	29
Student Initiated	6
No Report	3
	38

was funded. Funding period was tallied using the grant number (e.g. G00790000) provided on the face sheet of the final report. As can be seen from Table 1, the majority of grants were field initiated and included no report of their duration.

Table 2 shows that very few projects reported any

Table 2

Project Dissemination Products

Dissemination Product	Number of Projects Reporting	Products
Journal Articles	3	2
Book Chapters	1	1
Books	1	1
Articles/Chapters In Press	1	1
Manuscripts In Preparation	3	11
Presentation at National or International Conference	3	4
Presentation at State or Local Conference	1	1

dissemination activity. The fact that project final reports did not provide information about dissemination activity does not mean, however that there were no dissemination activities conducted by the project. Project directors frequently wait until project completion before preparing manuscripts for publication or presentation. Typically, dissemination activities occuring after project completion will not be reflected in final reports. Therefore, the number of dissemination activities

may actually be underestimated.

The numbers of persons serving as subjects in the coded, but not reviewed projects, are presented in Table 3. The majority of handicapped children and youth serving as subjects were mildly handicapped--mildly retarded, learning disabled, or behavior disordered. As can be seen from the table, several projects focused on mildly handicapped students as a group.

Table 3

Subjects Participating in Coded Projects

Category	Reports	Ss
Mildly retarded	2	167
Severely/profoundly retarded	4	407
Behavior Disordered	5	253
Learning Disabled	7	488
Mildly Handicapped (EMH, BD, LD)	5	396
(BD, LD)	1	17
Speech/Language Impaired	1	1
Physically Disabled	1	7
Severely/Multiply Handicapped	7	392
Non Handicapped	15	6230
Handicapped (no further specification)	1	17

Non-handicapped persons serving as subjects were either teachers of handicapped children or non-handicapped children serving as control/contrast subjects in projects focused on

handicapped students. Five of the projects account for 5743 of the non-handicapped subjects. These projects usually were surveys of teachers of handicapped students or projects in which such teachers served as subjects. Less than 500 non-handicapped students participated in SEP supported projects. As indicated above, non-handicapped students served as control or contrast subjects in studies focused on handicapped students. The reader is cautioned against interpreting these data as indicating that SEP is providing funds to study non-handicapped persons.

The data from the projects that were coded, but not reviewed, supplement the data presented in the two synthesis papers which follow. Together, the data describe a research program that can be considered vigorous, targeted on handicapped students, and which is generating useful information.

Appendix B

Communications Research: A Review of Field and Student Initiated Projects Supported by Special Education Programs

Herbert J. Prehm

31 July 1984

Background of the Problem and Statement of Purpose

Communication is a skill important to all handicapped children. Communication skills are needed for both survival and social aspects of life. Communications skills are needed by handicapped children if they are to participate fully in the behavioral transactions that surround them. The level of communication skill possessed by a handicapped child also significantly influences the quality of life and education experienced by that child.

Handicapped children exhibit a variety of problems related to the development and use of language/communication skills. Problems are not restricted to any single category of exceptionality nor to any particular age group. Examples of communication skills problems experienced by handicapped children include problems in the written and spoken word, understanding and using manual signs, and engaging in verbal interactions with other persons.

Because of the importance of communication skills to the development and education of handicapped children, Special Education Programs (SEP) of the Office of Special Education and Rehabiltation Services has supported a variety of research projects focused on this topic. Understanding the factors essestial to communication, designing procedures to facilitate communication skill development, and developing means to circumvent blocks to communication are but several goals of research in this area of inquiry.

Projects focused on communication have been conducted over a

period of years and have been supported under both the Field Initiated and Student Initiated Research Programs. Because interest in the development and use of communication by handicapped children continues, it is important to review what has been learned and accomplished through research supported by SEP to date.

The primary purpose of this research review was to summarize and integrate the findings of communications research supported under the field and student initiated research competitions held by SEP from 1976 through 1981. A secondary purpose was to use the review as a base for strengthening future research.

Because of the breadth of the topic and the time line available for project completion, integration of the findings of SEP supported research with the broader research literature was not feasible. Therefore, this report focuses only on the findings of the projects reviewed.

Method

Data Sources

Individual project reports serve as the subjects of this research report. Each project provides the raw data used for analysis, synthesis, and integration.

A total of 18 final reports were included in the data set. The 18 final reports were drawn from a larger set of 95 final reports provided to the Council for Exceptional Children by SEP. Each of the 18 reports focused on some aspect of communication.

Six projects were clearly identified as Field Initiated Projects, six were identified as Student Initiated Projects and six projects did not provide an indication of the program

authorization under which the were supported. There were two projects from 1978, seven from 1979, four from 1980, and five from 1981. Six of the projects were three year projects, eight were one year in length, and four projects failed to indicate their duration.

Materials

A Communications Research Coding Sheet was developed for the project. The coding sheet was designed to allow efficient abstracting of information common to each of the reports as well as information unique to individual reports. Information common to all reports included (a) program authorization, (b) dissemination activities, (c) number of studies conducted, (d) project focus, (e) project design, (f) subjects, (g) project replicability, and (h) graduate student training opportunities. Information unique to projects included (a) purpose, (b) method, and (c) principle findings. A copy of the coding sheet is attached.

Procedure

Each of the final reports reviewed on this project were furnished to The Council for Exceptional Children by the Division of Educational Services of SEP. CEC Staff and the project consultant reviewed titles and abstracts of the total set of 95 projects and identified those projects which were broadly related to one another.

Eighteen final reports investigated some aspect of communications skills of handicapped children. These reports were provided to the project consultant by CEC. The project

consultant read each final report to obtain a general knowledge base regarding report content. After the reports were read, the project consultant designed the Coding Sheet. Coding sheets were duplicated and used to code each project. Coding was accomplished by rereading each project and entering the information needed on the coding form.

Data contained in the coding forms was tallied subsequent to rereading and coding each final report. Descriptive data pertinent to the set of project reports was tabulated and summarized in tabular form. The number of projects related to a given subtopic of communications research was insufficient to perform any quantitative integration of the findings. Therefore, findings of the various projects were integrated in narrative form.

Results

Data Common to All Final Reports

The total number of studies reported in the 18 final reports is summarized in Table 1. Inspection of the table shows that a total of 28 different studies were clearly identifiable in the final reports. Differences between reports in the number of studies completed does **not** reflect differential productivity of the various projects. No implications to that effect should be drawn.

One final report was written in narrative fashion in which the findings of a number of studies were integrated with a broader research literature. The studies supported by that project were not, however, clearly identified. Therefore, the total number of studies supported by the 18 projects actually

exceeds 28. The table also shows that only two final reports failed to provide detailed information about the studies conducted.

Table 1

Number of Studies Reported in 18 Final Reports

Measure	f
Studies Reported	
5	1
4	0
3	3
2	1
1	12
	28
Reported in Detail	
3	3
2	1
1	15
0	2
	28

Note: One final report reported the results of several studies. However, the manner in which the report was written prevented the tabulation of the exact number of studies conducted. This report is not included in the tabulation presented above.

As can be seen from Table 2, the majority of the projects focused on research designed to increase understanding of communications processes. Studies within this grouping focused on such topics as studying the relationship between a manual sign and its referent, the communicative interaction process between profoundly deaf children and their mothers, and the verbal-logical behaviors expressed and the content of communication between parents and their preschoolers. The second largest

Table 2

Project Focus and Design

Dimension	f
Project Focus	
Increase understanding of communications processes	9
Curriculum development	3
Skill training	2
Assessment procedure development	2
Policy issues	2
	18
Project Design	
Experimental	9
Quasi-experimental	3
Case Study	3
Correlational	1
Survey	1
Other (literature review)	1
	18

grouping of reports focused on the development of language or communications skills curricula.

While a variety of research methods were used, the majority of projects engaged in true experimental research. Through such research, unequivocal relationships between independent and dependent variables can be established and knowledge increased. Quasi-experimental and case study research were the second most used approaches and each contributed useful information.

As noted in Table 1, 10 of the 18 projects provided detailed information about the 28 studies supported by the projects. However, while a great deal of information about these studies was presented, the information was, for the most part, insufficient to allow replication of the study. Only eight of the 28 studies provided enough information that the project could be replicated using the description of procedures provided by the report.

As reported in Table 3, seven categories of handicapped

Table 3

Subject Groups and Numbers

Subject	N
Severely/profoundly retarded	63
Learning Disabled	72
Hearing Impaired	65
Language Impaired	106
Physically Disabled	48
Multiply Handicapped	138
Other	
High Risk	20
Developmentally Delayed	7
Non-handicapped	3205
	3724

children served as subjects in the projects reviewed. In addition, a sizable number of non-handicapped children and adults participated in the research. The largest grouping of handicapped children serving as subjects were multiply handicapped. These children were, for the most part, cerebral

palsied and language impaired. Investigators in these studies identified the subjects as multiply handicapped rather than any other category. All handicapped subjects were included because they had communications difficulties or because the investigator was assessing the impact of the handicap on the communications process. The largest number of non-handicapped subjects (2914) were professionals in the area of speech/language pathology and who served as subjects in a survey research project. The remaining non-handicapped subjects served as contrast subjects in the experimental and quasi-experimental studies.

Subjects ranged in age from six months to adulthood. The majority of handicapped subjects were from 3 to 15 years of age.

As shown in Table 4, a total of 125 dissemination products

Table 4

Dissemination

Dissemination Activity	Projects Reporting	No Report	Number of Products
Published Articles/Chapters	3	15	33
Published Books	1	17	1
Journal Articles In Press	4	14	19
Articles/Chapters Submitted	2	16	3
Articles/Chapters In Preparation	2	16	22
Conference Presentations			
National/International	6	12	33
State/Local	4	14	14
			125

had either been developed or were in some stage of development. Articles in journals and books and presentations at national and international conferences were the primary avenues for dissemination of project results. Both avenues ensure that the research community is provided with project outcomes. While the total number of products is impressive, the number of projects reporting dissemination activities was extremely small. In fact, one project accounted for 57 of the 125. While the number of projects reporting dissemination activies was small, the numbers should not be interpreted as indicating that no more than 125 products were eventually produced by the projects. Typically, researchers do not disseminate their results until after a project is completed. Therefore, it is possible that a number of dissemination reports were made after the final report was submitted. Because of time contstraints, it was not possible to review the published research literature to locate reports that might have been produced subsequent to the projects.

A final general outcome of interest was the number of studies which reported that graduate students received research training through participation in the project. Only seven of the 28 projects provided any indication that graduate students received training. Six of the seven were student initiated research projects. Again, the reader is urged to exercise caution in interpreting these findings. Graduate students probably did work within most projects. If an investigator does not state that in a final report, initial project applications could be reviewed (an activity outside the resources of the current project) to identify graduate student participation.

Findings From Individual Reports

The 18 final reports clustered into five groups. The first cluster included nine studies focused on increasing understanding of basic communications processes. The second cluster included three projects focused on curriculum development. The remaining clusters each contained two projects. The third cluster investigated skill training procedures, the fourth focused on procedures for assessing elements of communication skills, and the fifth cluster dealt with policy issues.

Understanding Communications Processes

Nine final reports were included in this cluster. Three of the nine reports studied processes by which handicapped infants and their parent(s) communicate with one another. Two reports investigated language and syntax and two reports focused on variables which influence the rate at which manual signs are learned. One report studied variables influencing the performance of athetoid cerebral palsied children on a computer controlled communications device. The final project in this cluster focused on variables influencing referential communication in severely retarded children.

Infant-parent communication was studied by Kantor (1981), Kahn (1981), and McCollum (1983). Each study focused on a different aspect of the overall problem and each used subjects from differing categories of handicap.

Kantor (1981) investigated the communicative interaction process between two profoundly deaf children and their mothers. Utterances containing pointing behaviors and modulated verbs were

of specific interest. One hour video recordings of the interactions between the infant and their mother were taken every three weeks. One infant was studied from his twelfth through his twentieth month and the second infant was studied from her twentieth through her thirty-second month. Tapes were transcribed and communication patterns coded following a coding system designed by Kantor. Examples of behaviors coded include semantic relationship expressed by the utterance and verb complex modulation. Analysis of the data showed that (a) utterances increased over time, (b) complexity of the child's language increased over time, (c) mother modulated her language to correspond to the language level of the child, (d) pointing emerged as an important first structure in early production as a signalling device but with increasing age, pointing assumes a semantic role, and (e) verb modulation by Indexic Incorporation develops during the profoundly deaf child's third year.

Patterns of mother-infant communication were reported by McCollum (Walker) in 1983. Three related studies investigated (a) the communication channels used by babies and their mothers, (b) the characteristics of dyadic states which describe the combination of communication channels used, (c) mother's perceptions of their babies interactive capabilities, (d) differences in communication between groups and situations and (e) changes in pattern over time. Eleven multiply handicapped infants and 13 normal infants and their mothers were studied from the infants' sixth through thirtieth months.

In the first study, mother-infant dyads were video taped during a series of four minute interaction situations: play with

no toy, no instruction; play with toy, no instruction; play with no toy but with instruction; play with toy and instruction; feeding; and dressing. Baby's gaze, vocalization, and face and mother's gaze, vocalization, face, and kinesthetic action were coded from the video recordings. Analysis of **gaze pattern** data showed that (a) babies spent most of their time engrossed in the toy, (b) babies looked at the toy for longer periods of time during instruction than they did during play, (c) handicapped infants had shorter episodes of looking at the toy and longer episodes of looking at mother than did non-handicapped infants, (d) handicapped infants changed the direction of their gaze more frequently than did contrast infants, and (e) mutual orientation of gaze was more difficult for handicapped dyads to establish that it was for normal dyads. **Vocalization** data showed that both sets of infants were more silent than vocal and that they fussed very little. In addition, vocalization was greater at 24 months than it was at 12 months. While mothers of handicapped infants talked more than mothers of the non-handicapped when infants were 12 months of age, there were no differences between groups at 24 months. Turn taking was more difficult in the handicapped dyad. **The relationship between baby's gaze and mother's vocalization** results showed that (a) non-handicapped dyad partners were more independent of one another and (b) achieving reciprocal balance in the interactions of handicapped dyads was difficult to achieve. Mothers **rated play** as satisfying and as being of above average importance for development. Mothers of the handicapped infants rated play as being more important in helping their child

develop thinking skills than did mothers of non-handicapped infants. Social cues emitted by handicapped infants were difficult to interpret. As a result, interaction with handicapped babies was difficult.

The second study reported the results of a case study analysis of the interaction patterns of two dyads. The case study data confirmed the results of the first study. In addition, the data suggested that mothers were very facile in adjusting to the baby.

The third study reported data from three mother-handicapped infant dyads used in an intervention study. A multiple baseline design across two target behaviors was used. Target behaviors focused on different aspects of communication (e.g. moving face to baby in a playful manner, imitating vocalization, turn taking, etc.). The intervention period lasted from three to five weeks. Results of this study showed that mothers acquired the behaviors taught and that they incorporated the behaviors into later situations. Communication between mother and baby improved and became more pleasant.

Kahn (1981) observed the verbal interactions between seven developmentally delayed preschoolers and their parents and compared their performance with the performance of eight normally developing girls and their parents and seven normally developing boys and their parents. All children were between 42 and 60 months in age. Parent child dyads were observed over a 30 minute time period in which the parent taught their child to play with an unfamiliar toy and to sort a set of blocks. Mother-child and father-child dyads were observed. Verbalizations were tape

recorded, transcribed, and coded according to linguistic terms, communicative functions, and content references. Kahn evaluated 22 hypotheses using data from 78 (discourse) dependent variables using a series of four factor analyses of variance. The nature of the task had the greatest impact on behavior. Task influenced the degree to which parents and children participated, verbalized, responded, and referred to both instructional and substantive content. Task influenced both parent (e.g. frequency of initiating, asking questions, giving orders, etc.) and child (e.g. asking, cooperating, etc.) behavior. Task also influenced sequence of behavior emitted with children accomodating their behavior to that of their parents. It was of interest to note that teaching styles of mothers and fathers were similar and that differences that did exist complemented the teaching style of the other parent. Parents of developmentally delayed children provided less information about the topics discussed and requested less information than did parents of normally developing children. In addition, parents of developmentally delayed Ss did not provide their child with as much positive feedback as did parents of normally developing children. Parents of delayed Ss taught in a manner more intrusive than did the parents of the normal subjects.

Taken together, data from these three studies show that the language/communication patterns of handicapped infants and toddlers follow those of non-handicapped children. Furthermore, they show that a handicapping condition influences the manner in which parents and child interact. A disability puts a strain on

the pattern of interaction. The data also show that the parents of the handicapped child can change their behavior to accomodate the behavioral skills of their child.

Syntax used by different categories of handicapped children was studied in two projects. Yoshinaga (1983) studied hearing impaired and normally hearing subjects and Simms and Crump (1980) studied learning disabled and normal subjects.

Sims and Crump (1980) compared the syntax and vocabulary development of intermediate and secondary age level learning disabled and normal students. Groups of four subjects (two learning disabled and two normal) were shown two films without narrative. After the first film, each S was interviewed by a trained interviewer who asked S to (a) retell the story and (b) relate an aspect of the film to his or her life after the interview. Ss then viewed a second film and repeated the interviews. S responses were taped, transcribed, and typed. Typed transcripts were keypunched on data cards and entered into a computer. Transcripts were computer analyzed using programs available at Pennsylvania State University. Syntactic development was measured by the number of T-units used, mean number of words per T-unit and syntactic density. Syntactic density scores were based on 10 variables highly correlated with teacher judgments of high quality written language. Vocabulary development was measured by corrected type-token ratios, simple type-token ratios, number of different words spoken, and a vocabulary intensity score. Vocabulary intensity was based on nine variables. Analysis of **syntactic development** showed that learning disabled Ss produced significantly more T-units than did

normal Ss and that age of Ss did not effect T-unit production. No significant effects were found for mean length of T-unit. Normal Ss had significantly higher syntactic density scores than did learning disabled Ss; syntactic density increased with increasing age. Syntactic density scores of normal Ss were, on the average, about 1/3 of a grade higher than the scores obtained by learning disabled Ss. **Vocabulary richness** data showed no effects for number of word types or vocabulary intensity scores. Significant age effects were found for simple type-token ratio and the corrected type-token ratio. The youngest and oldest Ss had the highest type-token ratios.

Yoshinaga (1983) investigated the interrelationships of syntax and semantics in the spontaneously generated written language of hearing impaired and normal children. Text cohesion, clause development, and propositional analysis across five age groups of hearing impaired children were of particular interest. Written language samples were elicited using the Accident/Emergency picture from the Peabody Language Development Kit. Children wrote stories in groups of eight, completing their work in about 20 to 30 minutes. Written compositions were analyzed for clause development, text cohesion, and propositional analysis by two speech/language pathologists and the principal investigator. Syntactic ability was evaluated through measures of clause development, T-unit, and syntactic density. Semantic ability was evaluated through propositional analysis of the narrative. Interrelationships between syntactic and semantic ability were analyzed through analysis of text cohesion. Data

analysis showed that on 17 of 28 measures (e.g. words/T-unit, words/main clause,propositional phrases, number of subordinate clauses, total productivity, total words, etc.), hearing Ss exhibited performance significantly above that of hearing impaired Ss. No differences were observed for 10 measures (e.g., number of modals, be-have auxilliaries, number of possessives, number of T-units, conjunction cohesions, total number of propositions, etc.). Yoshinaga concluded (p. 117) that "overall productivity with relation to clause development, narrative discourse, and text cohesion, is significantly less in the hearing impaired children than in normally hearing children." However, when eight hearing impaired Ss whose reading grade level was third grade or better were matched with hearing Ss on reading level and age, all differences in performance on written language measures due to hearing loss disappeared.

Variables effecting the rate of manual sign learning were the focus of two reports. Related studies were reported by Lloyd, Fristoe, and Karlan (1982) and Bray and Thrasher (no date).

In their three year project, Lloyd et al., (1982) set out to (a) determine appropriate methods for studying sign learning, (b) identify relationships between signs and their referents, and (c) study differing approaches to presentation of the sign. The overall methodology used for their series of studies was a paired associate learning paradigm. The total number of studies conducted and the methods used for specific studies were not presented with clarity. The research reported showed that:

1. facilitative effects of manual signs on comprehension

of oral language appears to be a function of the conceptual characteristics of the sign and related to iconicity rather than input modality characteristics.

2. with mentally retarded Ss "comprehension recall is substantially facilitated by the presence of sign, alone or in combination with oral cues" (p. 9).

Additional results included (a) establishing a pool of 910 manual signs for which translucency ratings were determined and (b) development of videotape presentations of each of the 910 signs.

Bray and Thrasher evaluated the effect of three variables (iconic vs abstract; touch vs non-touch, and sign vs sign + name [spoken orally]) on the rate at which signs were learned by 24 adolescent severely mentally retarded subjects. Ss were trained individually in a quiet room. Training sessions were video taped. All Ss were pretested on motor imitation, vocal imitation, knowledge of manual sign formation, and receptive knowledge of object names. Ss were then trained to sign names for 16 objects to a total of 10 consecutively correct responses or a total of 50 trials. Ss were trained in either sign plus speech or sign only conditions. Number of correct responses per block of 10 trials was the dependent variable. Data were analyzed using a 2 (training group) X 2 (sign representation) X 2 (sign formation) X 5 (trial block) analysis of variance. Results of the analysis showed that (a) performance improved significantly over trial blocks, (b) touch signs were more likely to be formed correctly than non-touch signs, and (c) touch signs were learned faster than were non-touch signs.

Referential communication was the subject of one report. Bray and Biasini (no date) studied task variables influencing the ability of severely mentally retarded children (ages not reported) to function as effective communicators within the referential communication paradigm. The specific focus of the project was on the impact of (a) coping with similarity of the referent to the non-referent, (b) comparison skills, and (c) ability of the S to transmit a message and the formulation of an effective message. Twenty-seven severely retarded Ss were divided into three training groups. Training phases included stimulus familiarization, base-line (a store game), first training, second training, post-test, and near generalization test. The experimental group received comparison training in the first training session and message training in the second training session. The first control group (C1) received stimulus familiarization in first training and comparison training in second training. Control group 2 (C2) received stimulus familiarization in both first and second training. Twelve pairs of items (e.g. cup, pitcher of lemonade; puzzle, puzzle piece; spoon, plate with pudding, etc.) served as stimuli. Stimuli were presented to Ss in the presence of distractors such as a broken cup or a broken spoon. During stimulus familiarization training, Ss were presented with pairs of objects and asked "show me how you use these?" During the store-game baseline condition, S was seated at a table on which the stimulus was set. The referent and distractor were set on a counter. Ss were told to get the item that was used with the stimulus. S was to communicate which item was wanted through either a gesture or a word. Comparison

training consisted of putting S's hand on the referent and being told that the referent went with the stimulus. In message training, S was taught to ask (by word or gesture) for the referent. Three correct choices was the training criterion. Post-testing was a repeat of baseline training. Near generalization consisted of presenting S with six pairs of items on which they had not been trained. Data were analyzed by inspection. No differences between groups were observed for baseline and marked differences in response frequency and accuracy were observed on the post-test. Ss in the comparison and message training group made 23.6 responses, C1 made 14.0 responses and C2 made 5.6 responses. Near generalization data were of the same magnitude. Based on the data, the investigators concluded that the communication competence of severely retarded Ss could be improved.

Williams, Csongradi, Leblanc, and Barker (1982) studied the impact of control system variables on the ability of athetoid cerebral palsied subjects to control a two switch, user driven cursor in a row/column scanning system. A two-switch interface for response scanning and selection was developed for a TRS-80 microprocessor. Four control systems were compared using six Ss. Ss used a system for about two hours per day. Three runs of 12 trials were completed each day to a total of nine runs for the system. Single letters displayed on the CRT were the experimental stimuli. Elapsed time and scan time served as dependent variables. Differences between systems and Ss were significant for scan time. Row-column auto scanning, the most

frequently used interface system in actual practice, produced significantly more errors than did row-column direct scanning, row auto scanning and column auto scanning.

Curriculum Development

Three final reports were included in this cluster. One project focused on field testing set of activities designed to facilitate communication for children who were non-vocal. The second project developed a language intervention program for children with serious language disabilities. The third project focused on developing language training activities that would facilitate the transition of preschool age language impaired children to the regular classroom.

In a report of relatively poor quality, Helm and Shotel (1982) reported the results of a field test of an activity guide designed to facilitate non-vocal communication. A total of 51 children from two public and two private schools served as subjects. Ss vocal skills and developmental levels were assessed by published tests and by a criterion referenced test and a motivation questionnaire which had been developed from the activity guide. Ss were provided specific programming and provided with modified communications materials over the course of one school year. Specific programming suggestions were developed for each child from the activity guide by the principal investigator. In addition, the principal investigator made or modified materials (e.g. communication boards, switches, adapted toys, etc.) used in the program and made bi-weekly visits to classes. All 51 Ss were tested at the beginning and end of the school year. Scores from published tests from the year prior to

treatment were sampled for 22 of the 51 Ss. Pre-intervention gains for these Ss were compared with their gains during intervention. Tests (t) of the gains made by these Ss showed that the sample improved significantly from pre to post-test during treatment. There was, however, no change in the rate of change between the pre-treatment year and the treatment year. Differences between younger and older Ss were not significant.

In a two volume report, Conant and Budoff (no date) and Conant, Budoff, and Hecht (no date) reported the results of a three year effort to (a) develop a language intervention program for young children with serious language disabilities, (b) evaluate the intervention program and test its practical usefulness in the field, and (c) produce a marketable product. The language intervention program was based on a series of game situations (e.g. hiding games with objects, hiding games with pictures, communicative bingo and lotto games, action directive games, etc.) that could be played at three levels of difficulty. Forty-eight 3 to 8 year old children with severe language disability (mean length of utterance for the group was 1.0 to 2.0) were used to evaluate the intervention program. Subsequent to sampling Ss language, 26 Ss participated in a four month intervention followed by a second language sample being taken for all Ss. Amount of speech, long unit, syntax, and speech acts served as the measures used to evaluate treatment program effectiveness. Data were analyzed using a 2 (no or moderate delay vs severe cognitive delay) X 2 (treatment vs contrast) analysis of variance. Analysis showed that cognitive level had a

significant effect for speech composite, long unit, and syntax composite. Intervention was effective for the Ss with higher cognitive levels but had no effect on children from the low cognitive group. Presentation of two detailed case studies documented the kinds of gains typical of children with differing linguistic disabilities. Following development of the intervention program and evaluation of the program with children, Conant et al., (no date) had 21 practitioners evaluate the manual. A series of two hour workshops were used to teach the teachers how to use and develop games. In addition, teachers received supervisory visits from the investigators. At the end of the school year, participant feedback about the games was positive. Participant evaluations were used to modify the manual. Publication of the training manual in book form was arranged through LINC Marketing.

Warren and Schiefelbusch (1982) completed one of the best of the final reports reviewed. Their project had three research objectives:

1. to assess the generalized effects of preschool language training on students before and during enrollment in elementary school.
2. to determine what specific language skills are required to succeed in an elementary school classroom.
3. to develop auxiliary language training procedures to teach specific skills typically required in school settings.

Each objective was achieved by conducting an experiment tailored to that objective.

From 8 to 12 language impaired children ranging in age from 30 to 109 months participated in the study focused on the first research objective. All Ss were enrolled in the Language Project Preschool maintained by the Bureau of Child Research at the University of Kansas. Verbatim samples of language and contextual information were collected in 15 minute samples several times per week over an extended period of time. Samples were transcribed and entered into a computer for analysis. The computer was programmed to assign correct parts of speech to utterances. Using both training data and language samples, a series of analyses were conducted. Analyses focused on (a) generalization of language structures trained, (b) effects of high and low rates of speech (>15 or <15 utterances per 15 minutes), (c) effects of form complexity, (d) public school transition, and (e) generation of a language learning model. These analyses showed that:

1. 71 percent of the training structures trained were generalized to the classroom. Structures one morpheme longer than the child's mean length of utterance were not generalized.
2. rate of talking had no real effect on the distribution of pragmatic functions (p. 20).
3. one word utterances were used as answers and vocatives (p. 20). Utterances two to four morphemes in length did not differ for declaratives, questions, answers, requests/commands, imitation, and response to mand.
4. Ss Peabody Picture Vocabulary Test mental ages (MA)

were nine months below chronological age (CA) at entry into the Language Project Preschool, were eight months above CA at exit from the preschool, were one month above CA after one year in the public school, and two months below CA after two years in public school.

5. a language learning model data could be developed.

To assess the second research objective, a good communicator, a poor communicator, and one randomly selected control S were selected from 13 kindergarten classrooms. These 39 Ss ranged in CA from 5-5 to 6-6 years. Ss were observed in both structured and unstructured settings to obtain a verbatim language sample consisting of 50 audible sentences, a measure of sentence structure in both structured and unstructured situations, and Metropolitan Achievement Test scores. Analysis showed that:

1. Developmental Sentence Scoring distinguished good from poor communicators. Metropolitan scores distinguished poor from good or control Ss on auditory discrimination, visual discrimination, language, reading readiness, and quantitative skills. Teachers discriminated good from poor communicators on (a) makes verbal requests, (b) use of complex sentence structure, (c) speaking clearly, (d) attention span, and (e) use of complete sentences.

According to Warren and Schiefelbush (1982, p. 46) the "greatest difference between good and poor communicators lie along linguistic and cognitive dimensions. Social differences in terms of language usage may exist, but did not significantly

distinguish Ss in this study." They believe that language intervention programs for children who exhibit below average language skills "...should focus most heavily on the structural aspects of communication and related cognitive and perceptual skills" (p.46).

Four separate, but related studies were conducted to achieve the third research objective. The first study (3.1) focused on teacher and normal peer interaction with language delayed preschool children. The purpose of study 3.1 was to assess the effects of mainstreaming on the productive verbal behavior of language delayed preschool children and their non-handicapped peers. The second study (3.2) focused on training a social skill. Study 3.3 investigated the effects of teacher mands and models on the speech of language delayed children who were unresponsive. Study 3.4 evaluated the abilities of mothers to apply four incidental teaching techniques correctly and to assess the effects of these techniques on child language. Data analysis showed that:

1. in study 3.1, non-handicapped preschoolers displayed much higher rates of verbalization and spontaneous initiations than did language delayed children. Teacher verbalizations were similar for both kinds of children and were similar to teacher verbalizations in a traditional preschool classroom as well. In contrast to traditional class non-handicapped children who verbalized more to one another than to their teacher, non-handicapped children enrolled in the Language

Project Preschool verbalized more to their teacher and one another than they did to their language delayed classmates.

2. social skill training did not markedly influence spontaneous invitations to play. Play invitations made by non-handicapped Ss to language delayed Ss were usually the result of teacher prompts.
3. use of "Mand-Model" teaching strategies by the teacher resulted in both teachers and Ss increasing their verbalization during intervention. Furthermore, Ss generalized to free play situations. In addition, when the model was faded, teachers shifted from MANDS to questions and increased their verbal productivity and Ss also increased their verbalization.
4. training mothers to use incidental teaching techniques resulted in their increasing their use of such techniques over baseline conditions. In addition, mothers generalized the techniques to new situations. As a result, their children's rate of talking increased.

Results of the total project led Warren and Schiefelbusch to conclude that "...the optimal preschool language training program..." should be "...a combination of structured and milieu training" (p. 72). They also indicated that they believed that preschool programs should teach language delayed children general strategies for learning in addition to providing specific skill training. Acquisition of learning strategies appears to be necessary for the child to continue to develop language skills in

the absence of direct remediation in those areas where the child is experiencing difficulty.

The three reports focused on communications skills curricula each make substantial contributions to practice. The projects show that a variety of techniques are useful in stimulating language and communication skills. Furthermore, they provide the field with validated materials and procedures by which language skills of handicapped children can be improved.

Skill Training

In a project related to that reported by Lloyd et al., (1982), Creekmore and Lloyd (no date) reported the results of an experiment designed to determine the effects of a pretraining general imitation experience on the acquisition of manual signs by severely retarded children. Twelve nonverbal, institutionalized severely retarded children who ranged in age from 8 to 14 years served as subjects. During pretraining, six Ss were randomly assigned to a control, free-play condition. These Ss engaged in five days of free play with the experimenter. Experimental Ss received rapport and imitation training on 20 motor movements during pretraining. Subsequent to pretraining, Ss learned nine signs taught by one of three methods: imitation, molding, and imitation/molding. Training methods were presented in a counter-balanced order. Training sessions lasted 30 minutes and were conducted twice a day for 10 days. Training lasted until Ss made three consecutively correct responses or participated in a maximum of 20 training session per sign. Ss were post-tested one day after training. Data analysis showed

that the experimental group had a significantly higher number of correct responses than did the control group during training and made more responses on the post-test. Ss also responded more frequently when sign stimuli were presented in either the imitation or imitation/molding modes.

Mandell (no date) reported the results of a project designed to evaluate the effectiveness of the Ling System of Speech Training as an appropriate method for facilitating gains in the suprasegmental and segmental aspects of speech and in speech intelligibility in 15 hearing impaired children who ranged in age from 5.6 to 8.0 years. Using a case study approach, pre- and post-treatment tape recordings of speech samples were collected in three different situations: play with toys ("Tell me about this"), sequence pictures ("Tell me a story"), and elicited response to pictures ("What is this?"). Responses were tape recorded and transcribed phonetically by Speech Pathologists holding the Certificate of Clinical Competence. Each S was administered the Ling Phonetic Evaluation to determine the speech skills to be taught. Each S was seen in half-hour training sessions and average of 1.7 times per week with an average total number of 16 sessions. In addition, an aide worked with each child an average of 3.4 times per week for a total average of 52 sessions which lasted 10 minutes in length. Post-testing indicated that the average gain in suprasegmental targets was significant as was the increase in intelligibility. In addition, consonant errors were decreased significantly. Correlations of measures of phonatory control and durational aspects of speech with intelligibility revealed strong relationships with

intelligibility.

Assessment Procedure Development

The two studies included in this cluster were focused on vastly different topics. Both studies were focused, however, on the evaluation of procedures designed to assess communications skills of handicapped children.

Seibert (1982) attempted to develop empirically based scales of early social communication development in multiply handicapped (N=70) and high-risk (N=20) preschool aged children. Scales were designed so that they included prerequisite skills and related to the sensorimotor-cognitive domain. The project developed an Early Social-Communications Scales Instrument comprised of eight scales. The instrument assessed three functions: social interaction, joint attention, and behavior regulation. A study of the test-retest reliability of the scales was conducted with 28 Ss. Validity was assessed by correlating ESCS scores with scores from an Adapted Uzgiris-Hunt Scale and the Bayley Mental and Motor Scales. Inter-rater reliability for the ESCS was .93 with a range from .53 to .91. The median correlation was .84 for individual scales. One week test-retest reliability was .93 with a median correlation of .89 for individual scales. Validity studies resulted in a correlation of .85 between the ESCS and the Adapted Uzigiris-Hunt Scale for all subsamples.

An interesting approach to the development of assessment procedures was taken by Coleman, Cook, and Meyers (no date). Their project was designed to identify communication characteristics pertinent to matching augmentative communication

device capabilities to the needs of non-oral children. Critical features of devices and human performance and a process of selecting and tailoring systems to educational needs were of particular interest. A total of 42 non-oral, physically disabled subjects who ranged in age from 5 to 21 years participated in the various aspects of this project. The final report contains a series of 10 papers which read like journal article manuscripts and which describe the development of a set of client assessment forms. An initial set of forms was used for six months, critiqued, and revised. The revised forms were used for six months and revised again. The final set of forms described in the report had been in use for nine months. The procedure devised provided each S with an initial interview. Based on the interview, S went to a communication interview, a prelanguage interview, or was terminated. Prelanguage interviews led to a prelanguage assessment and development of a set of treatment recommendations. Communications interviews included interface assessment or a cognitive/language assessment which led to program implementation. Significant others were included in the interview process as an aid to establishing treatment goals. A matching process was begun with Ss as they began their treatment program. S tried out various devices and a final selection of a communication aid was made. Subsequent to the treatment program and aid selection, clients were followed up by project staff. Project results showed that:

1. it is possible to assess non-oral clients abilities, needs, and goals with a series of interviews and procedures designed to determine the most appropriate

symbol system, physical selection mode and site, cognitive selection, mode, output format, vocabulary size, and vocabulary manipulation.

2. assessment can be matched to systems and devices which are defined in the same terms.
3. systems for school aged children must be flexible and/or interchangeable. Multiple rather than single systems for a given individual are the rule rather than an exception.
4. a system that prints pictures, line drawings, Rebus symbols or some similar set of symbols is needed.
5. a small, lightweight speech synthesizer is needed.

Of the two projects in this section, the one conducted by Coleman et al. (no date) seems to have the greatest potential for effecting special education practice. Their project identified a useful tool and approach to providing communication aids for handicapped persons who are non-oral.

Policy Issues

Two final reports were classified as focusing on policy issues. As in other clusters, the topics of the reports included in this subsection were vastly different.

Snope and Lingwall (1983) reported the results of a three year project designed to:

1. identify needs of the communicatively handicapped that must be addressed by the speech-language pathology and audiology profession.
2. prepare a list of the communication needs of children

and adults who are communication handicapped.

3. develop competency statements relative to how the communication needs identified can be addressed.
4. define the needs of communication handicapped persons that are not been addressed or addressed inadequately by the profession.

Two approaches to addressing project objectives were used. The first three objectives were addressed by conducting a series of 10 regional meetings in which participants discussed the communication needs of the communication handicapped and identified areas of unmet need. Over 130 persons representing the communication handicapped, parents, practitioners, researchers, and clinical trainees participated in the ten meetings. The proceedings of the ten meetings were synthesized to produce a list of discrepancies between needs identified and needs met. In addition, a list of 38 competencies for speech-language pathologists and audiologists was developed from the materials produced by the regional meetings. Subsequent to the regional meetings, a survey form based on the 38 competencies was mailed to 4,223 persons. A total of 2,914 (73.8%) forms were returned. Survey data were analyzed in a variety of ways and showed that (a) respondents believed that the Certificate of Clinical Competence (CCC) should continue to serve as the credential basic to entry into the profession, (b) bachelor's degree (BA) level speech pathologists work with school ages Ss, do testing, and remediate articulation problems, (c) BA level speech pathologists rate their skills lower on 29 of the 38 skills than do holders of the CCC, and (d) BA level speech

pathologists were rated as less skilled than CCC holders by holders of the CCC, program directors, and others. In addition, the frequency with which various skills were used and the source of training for various skills were identified. The fourth objective was addressed at a national conference sponsored by the American Speech and Hearing Society. The conference developed a variety of recommendations designed to address the issues raised by the regional conferences, survey, and conference and transmitted those recommendations to the leadership of the American Speech and Hearing Society.

Rivera (1982) conducted a literature review as a basis for the preparation of a paper reflecting the state-of-the-art in bilingual special education in the areas of assessment, language assessment, placement, personnel preparation and delivery of services. For the purposes of the present report, only those sections of Rivera's report that focused on language are included. Literature to be reviewed was obtained in a variety of ways including publicizing the nature of the project through a variety of means, computer searches of the ERIC system, mail and telephone contact with experts in the education of Hispanic students, and obtaining information on funded SEP model service delivery programs and personnel preparation programs from SEP. Literature review showed that "language dominance testing tells little about the educational needs of an individual child. Furthermore, it is not possible to determine language dominance through the use of a standardized testing procedure" (p. 86). Information gaps relevant to language assessment include

1. "a critical need for an interdisciplinary approach to language assessment that utilizes a strong ethnographic base" (p. 87).
2. a "lack of commercial tests that measure functional language proficiency in the first and second language" (p. 87).
3. "a need to develop new methods of assessing language that more closely reflect contemporary linguistic research and theory" (p. 87).

Topics in need of research were reported to include

1. the language characteristics of monolingual children compared to those of the different Hispanic groups" (p. 88).
2. "studies of the functional language competence required in schools at various ages and/or grade levels" (p. 88).
3. "the effects of bilingual vs monolingual English language instruction on the cognitive, social, and emotional development of Hispanic handicapped students" (p. 89).

Discussion

The range of topics investigated and the research methods used in the final reports reviewed in the present report varied widely. There were too few projects focused on any one topic to conduct a quantitative integration of the literature. Because of the range of topics included in the reports, integration of the reports into a cohesive whole is also precluded. The review does, however, provide a summary of what has been learned over

the past five years by SEP sponsored field and student initiated research on communications skills of handicapped children. Therefore, the review is useful in establishing a baseline of knowledge against which future progress can be judged.

The review is also useful in that it (a) shows that a variety of useful intervention techniques have been developed, (b) provides useful information about both the early language development of handicapped infants and the manner in which their parents/caregivers interact with them, and (c) described how communication aids can be matched to the communication skills of non-oral handicapped persons and showed that intervention programs can facilitate development of communication skills by such persons. Furthermore, sufficient information is provided about each project to allow other researchers to determine if they want to review the full project report to obtain ideas for research which extend the findings of projects completed to date.

The review also identified a significant weakness among persons conducting research with handicapped children. This weakness relates to the manner in which researchers report the results of their work. As noted in earlier sections, many final reports did not include a variety of information that would be useful to a anyone attempting to conduct a literature synthesis. Frequently missing were (a) the date of the final report, (b) the number of years the project lasted, (c) information about whether the project was field or student initiated, (d) detailed information about the subjects used in the study, (e) detailed

information regarding the procedures used to conduct the studies included in the final report, and (f) information about dissemination activities. Missing information detracts from the usefulness of a given report and precludes the possiblity of replicating the project to verify results.

As professionals, researchers interested in handicapped children should voluntarily establish a format for the full reporting of project procedures, outcomes, and dissemination in the project's final report. Agreement on such a set of guidelines would be a major step toward increasing the utility of the final reports submitted to the Office of Special Education Programs.

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COMMUNICATIONS RESEARCH CODING SHEET

PROJECT ID#:_____ YEAR:_____

GRANT PERIOD:_____YEARS

PROGRAM AUTHORIZATION:_____FIELD _____ STUDENT INITIATED RESEARCH

DISSEMINATION:

Number of journal articles published:_____

Number of journal articles in press: _____

Number of national/international conference presentations:_____

Number of state/local conference presentations:_____

NUMBER OF STUDIES:

Reported:_____

Reported in detail:_____

GENERAL NOTES:

PROJECT ID#:_____ Page____of____pages

STUDY: _____OF_____

FOCUS OF PROJECT

_____Assessment procedure development/evaluation
_____Increase understanding of communications processes
_____Skill training
_____Curriculum development
_____Policy issues
_____other (e.g._____)

PROJECT DESIGN:

_____Survey
_____ase study
_____Quasi-experimental
_____Experimental
_____Correlational
_____Other

SUBJECTS:

Number:_____ Age range:_____ to _____ months/years

Type:

_____mildy _____moderately _____ severely/profoundly retarded

_____emotionally disturbed

_____learning disabled

_____hearing impaired

_____visually impaired

_____speech/language impaired

_____physically disabled

_____severely/profoundly (multiply) handicapped (e.g._____)

_____non handicapped

SUFFICIENT DETAIL PRESENTED TO ALLOW REPLICATION? Y N

GRADUATE STUDENTS RECEIVED RESEARCH TRAINING THROUGH PROJECT Y N

PROJECT ID#_____ Page___of___pages

PROBLEM:

METHOD:

PRINCIPLE FINDINGS:

COMMENTS:

Appendix C

Review of SEP Supported Research: Assessment

Janet S. Gaffney

University of Mississippi

17 August 1984

REVIEW OF SEP-SUPPORTED RESEARCH: ASSESSMENT

The purpose of this review is to synthesize the information generated from grants supported by Special Education Programs (SEP) in the area of assessment. Assessment represented a major thematic strand in grants funded by SEP during the last 5 years. Assessment was defined as "a process of collecting data for the purpose of making decisions about individuals" (Ysseldyke et al., 1983, p. 76). Applying this broad definition, final reports submitted during this period were identified for inclusion in this review.

Grants serve a twofold purpose. First, and primarily, a significant contribution may be made to the field of special education that otherwise may not have been possible. Second, and conjointly, an investigator is provided the time and/or resources to pursue, in a concentrated manner, an area of interest and expertise. A review of grant-funded research is a means for accessing valuable information about the current state of the art of special education assessment.

Final reports function as a vehicle of communication and a system of accountability between the project investigator and the funding agency. In addition to the dissemination activities conducted internally within the grant, the final report is a means for summarizing and sharing the overall results of the project. Investigators furnish evidence to demonstrate that they have accomplished the objectives proposed in the grant. Researchers also have the opportunity to explain when unexpected findings or unanticipated factors lead to modifications of the project's objectives.

Final reports are potentially a valuable, though often neglected, resource for both practitioners and researchers. A review of recent final reports is, thus, fertile ground for determining: (a) the current state of the art of assessment relative to special education and (b) implications for practice and research.

Method

Abstracts of the 95 final reports submitted to SEP in the last 5 years were reviewed for their topical content. Assessment was identified as a major strand addressed in a subset of these projects. The 18 final reports included in the subsequent review are listed in Appendix A.[1]

A method was designed for systematically coding both quantitative and qualitative information generated from the final reports. The Assessment Research Coding Sheet is presented in Appendix B. General grant information was described on the first page. The general description of the grant included: (a) reference information, i.e., author, title, agency, grant number, and year of completion; (b) grant period; (c) dissemination activities; (d) both the number of studies reported and the number reported in detail; and (e) stated purpose(s) of the project.

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[1]Citations of the final reports within the text refer to Appendix A. To avoid duplication, only citations other than final reports appear in the reference list.

The two subsequent pages were completed for each separate study reported in detail within a final report. Each study was coded according to its focus, assessment purpose, and research design. A list of multiple options was generated by the author for each of the three study characteristics. After reading each study, the option that best described the study was selected. In addition, information regarding the subject sample was recorded. Studies were coded for total number of subjects, number of subjects within each category of exceptionality, and age/grade ranges of the sample. Yes/no responses were circled for the following questions:

1. Was sufficient detail presented to allow replication?
2. Did graduate students receive research training through the project?

Finally, notes summarizing the major components of a research study were recorded. The outline included a statement of the problem, method, and principal findings. A comments section was employed for additional notes.

Limitations

As appealing as it is to report numerical data that describe grant activities, some practical problems were encountered. A presentation of the limitations of the procedure was deemed appropriate prior to discussion of the results.

The study is limited to final reports completed in the last 5 years. This limitation is justifiable in light of the fact that

significant findings evolving from grants prior to this period would already be available in the professional literature. The specification of any time period, however, reflects the priorities established annually by the funding agency.

This review incorporates only the research funded by SEP. Research supported by alternative funding agencies and nongrant research is not included in the sample. Generalizations of the results of this investigation to other funding agencies or to non-grant-supported research would be inappropriate.

In regard to the reports themselves, the authors presented their information in a variety of formats with varying degrees of completeness. Specific examples of information omitted from the final reports included: the grant number (Bullard, 1982), author(s) ("Learning Potential," 1983), completion date (Coleman, Cook, & Meyers, 1982; Goldberg & Zern, 1982), and the length of the grant period (Fifield, 1983). This descriptive information was derived from the content and timelines if it was not available on the cover page.

The authors wrote their final reports using a range of formats. Dissemination activities that were presented as lists of articles and conference presentations (Seibert, 1982; Spellman, Cress, & Sizemore, 1982) were more accurately counted than when this information was embedded in the content (Evans & Voeltz, 1982; Reuter, 1982). The possibility exists, therefore, that the totals for the types of dissemination activities do not correspond to the actual numbers.

Finally, the reader should note that the totals for the types of dissemination activities reflect the quantity and status of manuscripts at the time the final report was submitted. Subsequent to completion of the final report, additional articles may have been written, submitted, and/or accepted for publication. Analogously, additional conference presentations may have transpired. In consideration of potential postgrant activities, the dissemination totals in this review may underrepresent the actual totals.

Results and Discussion

Two distinct types of information were coded from the final reports. Each requires its own method for reporting the results and will be organized in two sections. First, the quantitative results that provide a general overview of the final reports will be presented. Second, the content of the research will be discussed in a narrative review.

Descriptive Data

A review of the 95 abstracts of final reports submitted to SEP from 1979 through 1983 resulted in the inclusion of 18 final reports in the assessment strand. Tallying of the type of program authorization demonstrated that 5 (28%) were student-initiated and 13 (72%) were field-initiated projects. Grants were approved for periods of 1 to 5 years. There were nine 1-year, two 2-year, six 3-year, and one 5-year grants.

Grant period. A review of the data regarding the length of SEP support relative to the initiation year of the project indicated that a gradual reduction of multiple-year grants occurred between 1975 and 1982. This relationship becomes clear when student-initiated projects, each of which received support for 1 year, are excluded and only field-initiated grants are considered. The only 5-year field-initiated project was approved by the Bureau of Education for the Handicapped (BEH) in 1975 (Haring, Liberty, & White, 1978). The Haring et al. project is the only assessment grant in the sample that began prior to 1978. The six field-initiated grants initiated during 1978 and 1979 were approved for 3 years each. No 3-year grants were initiated subsequent to 1979. Of the four field-initiated grants that commenced in 1981 and 1982, half received support for 2 years. The other half were approved for funding for a single year, as was the sole assessment grant initiated in 1982.

Studies reported. Two of the 18 assessment grants were literature reviews in which research studies were not conducted (Kratochwill & Cancelli, 1982; Rivera & Noboa, 1982). The remaining 16 investigations produced a total of 62 research studies ranging from 1 to 14 per final report (M = 3.88, SD = 3.95). Of these 62 studies, 32 (52%) were reported in detail. The number of studies reported in detail ranged from 0 to 14 (M = 2.28, SD = 3.47).

The total number of studies reported, differentiated by the length of the grant period, for the 16 research projects will be covered. The shift in the funding pattern from multiple- to single-year grants

drastically reduced the numbers of studies conducted. The final report of Haring et al. (1981), the only 5-year grant, included a single study. The authors, however, limited the content of their final report to the final year of the project. From 3-year projects, 36 (58%) of the studies were generated (M = 6.00, SD = 2.76). Investigators on 2-year grants produced 15 (24%) research studies (M = 7.50, SD = 9.19). In comparison, authors of 1-year grants discussed 10 (16%) studies (M = 1.43, SD = 1.13). Not surprisingly, the mean number of studies produced in multiple-year grants drastically exceeded the mean number of studies reported in 1-year grants. The reader should recall that five of the seven single-year grants were student-initiated projects. Students described the one study upon which their dissertation was based in their final reports.

Review of the 32 studies that were reported in detail for evidence of training of graduate students and potential for replication produced the following results. Graduate students received training in 21 (66%) studies. Sufficient detail was presented in the final reports for replication of 19 (59%) research studies.

The 32 research studies that were described in detail were also coded for the focus of the project, assessment purpose, and research design. A description of these results is reported next. The focus of the project refers to the purpose of the study as delineated in the objectives and/or research question. The purpose of the majority of studies, 18 (56.3%), was the validation of an assessment instrument. The researchers addressed the development of an assessment instrument

(12.5%) and decision-making skills (12.5%) in four studies each. Training of personnel was conducted in three studies (9.4%). Bias in assessment (3.1%), policy issues (3.1%), and parental involvement (3.1%) were designated as the purpose of one study each. Additionally, both of the literature reviews addressed issues of assessment bias.

The categorization of studies by assessment purpose was included to describe the types of decisions that would be made by using the assessment data. The five coding categories are modifications of the reasons for assessment defined by Salvia and Ysseldyke (1981). Few authors gave a clear statement of assessment purpose. In many cases, the kinds of decisions that would be made regarding students, based on the data, had to be inferred from the final reports.

The most common reason for assessment was to provide data for planning instruction and making decisions regarding interventions. Instructional planning was coded as the purpose of 20 (63%) studies. Assessment was used for screening and referral decisions in 6 (19%) of the studies. Two studies were identified that addressed each of the following purposes: classification (6%), program placement-setting decisions (6%), and program evaluation (6%).

Finally, the designs employed in the research studies will be summarized. Ten studies were descriptive in nature (31.2%). Nine studies were correlational (28.2%). Questionnaires and interviews were employed in eight survey studies (25%). Three studies used quasi-experimental designs (9.4%), and one study employed an experimental

design (3.1%). A case study approach was also used in only one study (3.1%).

Dissemination activities. The status of professional papers and conference presentations generated from the 18 assessment grants demonstrates a high level of dissemination activity for a subset of investigators. Of the 18 final reports, no record of dissemination was reported for 11 (61%) projects. The authors of the 7 (39%) remaining final reports were extremely productive in completing a wide variety of professional activities.

Project personnel reported that 4 articles had been published, 6 were in press, and 8 had been submitted to professional journals. Of 24 unpublished manuscripts, 21 were available from the authors and 3 were in preparation. Presentations had been completed at 15 national or international conferences, and 7 at regional, state, or local conventions. In addition, 23 lectures and in-service workshops had been conducted. A book was in preparation, and 4 chapters were in press. Although the numbers and types of dissemination activities were equally distributed among the authors, Seibert (1982) was exceptionally productive in most categories.

In the section on limitations, the possibility was suggested that the most recently submitted final reports would include fewer dissemination activities. The data do not support this conclusion. The subset of the investigtors who were active disseminators completed final reports in either 1982 or 1983. Nine other final reports submitted

during this same 2-year span and two completed prior to 1982 contained no record of dissemination activities.

Summary. From 1979 to 1983, 18 of the 95 final reports submitted to SEP addressed assessment issues. These grants were initiated during the period 1975 through 1982, inclusive. The length of funding gradually decreased over this 8-year period; however, an increase was observed in the number of single-year grants during the same period. Two of the 18 grants were literature reviews. The remaining 16 grants provided support for 62 research studies. Thirty-two of these studies were reported in detail in the final reports. As one would expect, the mean number of studies was greater for multiple-year than for single-year grants. The focus of 56% of the studies reported in full was validation of an assessment instrument. Intervention was identified as the purpose of the assessment process in 63% of the studies. A straightforward statement of the purpose of the assessment process under investigation was rarely included in the final report but was inferred from the text. Descriptive, correlational, and survey studies were the most popular research designs.

The quantitative data tabulated and summarized in this section should be interpreted with caution. Enumeration, alone, offers a narrow perspective of the final reports. Kaplan (1964) described the mystique of quantity as "an exaggerated regard for the significance of measurement, just because it is quantitative" (p. 172).

In terms of this review, the numerical data were presented to describe characteristics of the final reports. No attempt was made to

assess the quality of the research conducted under the auspices of these grants. Therefore, conclusions regarding the relative value of grants based on the number of studies reported were not made, nor should they be inferred.

Narrative Review

In this section, the content of the final reports will be summarized. This review will be limited to the studies that were reported in detail and the two final reports that were literature reviews. The challenge of this endeavor lies in the variety of research problems investigated within the area of assessment.

A conceptual framework was needed in order that related research from the sample could be presented in a cohesive manner. For the most part, research studies within the same grant had a common focus. In addition, overlap of focus was apparent in studies reported in separate final reports. Grouping studies with a similar focus was therefore an efficient organization for this review.

The descriptors of the different foci generated for use on the coding sheet will also be used as the outline for summarizing the research from the sample. The subsections of this review correspond to the descriptive categories. The purpose of this review is to summarize the research problems investigated, the subjects involved, the methods employed, and the principal findings.

Development and validation of assessment instruments. First, measurement instruments that were developed as part of a SEP project

will be reviewed. Then investigations that were conducted to revise or validate the use of an already existing instrument with a handicapped population will be presented.

Evans and Voeltz (1982) developed a Behavior Systems Observation System that allowed recording of percent duration of excessive behaviors of severely handicapped children as well as simultaneous recording of the children's interaction with environmental factors. The target observations were inappropriate behaviors that were performed excessively and required intervention. The list of 95 excessive behaviors was derived from classroom observations, examination of the information included in a child's case history, and a review of intervention studies that attempted to reduce excessive behaviors. The purpose of the measure is to provide guidelines that assist teachers in selecting intervention priorities by considering response interrelationships.

This final report does not contain enough information on any individual study for a critical review. References to articles and manuscripts generated from the grant were frequently cited. The assessment procedures, however, demonstrated a sophisticated use of technology and incorporated several critical factors often omitted from the assessment process. These elements of the project will be described.

1. Data were collected longitudinally. For a subset of 66 severely handicapped subjects (CA 2-8 years), observations were completed for 2.5 years.

2. All subjects were drawn from public school educational settings and were observed or videotaped in three situations: free play, small group, and individual instruction.

3. One observer coded excessive behaviors with simultaneous coding of the interaction of the child with the environment by a second observer. All observations were recorded on microprocessors at the time of data collection. This procedure permitted the collection of both frequency and duration data on target behaviors.

The malfunction of equipment, logistics in the coordination of two on-site observers, and lack of scphistication of the microprocessors in handling large data sets were some of the problems confronted in this investigation. The longitudinal collection of frequency and duration data of children's behaviors in different environmental situations are critical factors that are often ignored in the assessment process.

Two instruments were developed in the area of communication for use with handicapped children. Seibert (1982) reported the development of the Early Social-Communication Scales (ESCS) to evaluate infants' and toddlers' adaptive interactions with persons during their initial 30 months of life. Three major communicative functions are assessed with the ESCS: social interaction, joint attention, and behavior regulation. Further description of the content or procedures for administering the ESCS were not included in the final report.

Approximately 20 high-risk and 70 handicapped infants (i.e., Down's syndrome, mentally retarded, physically handicapped, multiply handicapped, hearing impaired, visually impaired, and behaviorally

disordered) were included as subjects in test-restest, interrater reliability, correlational, and training studies. A discussion of these results is inappropriate here without additional information about the content of the individual scales and the method of measurement.

In addition, three different purposes for the use of scale appeared in the text of the final report. The results of measurement are to be used to predict learning potential, to validate a stage model of cognitive development, and to determine appropriate intervention activities. Again, more information is needed to determine if the ESCS is appropriate for each of these purposes.

Seibert (1982) reported that the ESCS had undergone numerous revisions throughout the grant period. Simplification of the administration procedures was needed before the instrument would be available to the practitioner or researcher.

The second communication grant was implemented by Coleman, Cook, and Meyers (1982). The overall purpose of the project was to identify the communication needs and capabilities of nonoral children that are relevant to the selection of the most appropriate augmentative communication system (ACS) for the child. In order to match the ACS to the user, a practitioner must have knowledge of the vocabulary needs of the child. The particular study of interest was designed to develop an instrument to determine the perceived vocabulary needs of nonoral school-age handicapped children. The 25 nonoral students (CA 7-21 years) identified had cerebral palsy or neurological/neuromuscular disorders.

Since these children were unable to express their communication needs, "relevant others" were identified who had frequent contact with the children. Relevant others included 150 residential staff members, school personnel, peers, and parents of the nonoral children. Through a semistructured interview format, topics and messages were elicited from the participants. This type of message was perceived by the participants to be one the child needed or desired but currently was unable to communicate.

A questionnaire was developed with 91 message statements derived from the interview. A seven-point rating scale was provided for the respondent to rate each item according to its "appropriateness" for the child. A total of 98 questionnaires (70%) were completed on the 25 nonoral students. The coefficient of internal consistency was .98. Through the use of principal-components factor analysis with varimax rotation four factors emerged as reflecting vocabulary themes. The four factors identified as areas of communication needs were: (a) interpersonal and academic, (b) recreational activities and special events, (c) basic needs, and (d) apperceptive needs. The results of the indirect measure may assist practitioners in determining communication priorities for a child. The vocabulary and messages most frequently identified may be incoporated into the initial vocabulary of the ACS.

The mandate of Public Law 94-142 that handicapped students must be provided appropriate physical education services was the catalyst for the development of two physical fitness tests. Both tests were constructed for the purpose of identifying the unique physical fitness

needs of handicapped persons. Ulrich and Wessel (1983) described their instrument as a standardized criterion-referenced test (CRT) of motor skills and physical fitness. Winnick and Short (1982) designed a norm-referenced test (NRT) of physical fitness.

Ulrich and Wessel (1983) constructed test items that were consistent with 16 objectives from the physical fitness and motor skill domains and described both the qualitatie and quantitative standards for a correct behavioral response. The test was administered to a sample of 279 subjects (CA 3-12 years) that consisted of 117 normal, learning disabled (LD), and emotionally disturbed (ED) children placed in regular physical education classes, and 96 educable mentally handicapped (EMH) and 66 trainable mentally handicapped (TMH) children from self-contained classes. These data were used to establish norms for examining a student's performance relative to that of a particular group. Performance on a CRT, however, should be measured against a fixed standard. The statistical analyses that were used to assess the relationships between age, gender, and classification variables were inappropriate for the small and unequal sizes of cells.

Winnick and Short (1982) appropriately tested a large sample of 3,914 subjects (CA 10-17 years). The subjects were 1,468 hearing impaired (HI)/deaf, 649 visually impaired (VI)/blind, 605 orthopedically handicapped (OH), and 1,192 nonhandicapped (N) youths. The principal finding of this investigation was that the factor structures of the subject groups exhibited similar patterns. The relative performances of the groups on the components of physical fitness were N > HI > VI > OH.

Although the performances of HI and deaf students were similar on all components, VI subjects performed significantly better than blind subjects on tasks requiring movement through space.

The purpose of three projects was to evaluate the appropriateness of using existing tests with different target populations. The System of Multicultural Pluralistic Assessment (SOMPA) has been proposed as a culturally and racially nondiscrimintory system for educational decision making. The incorporation of multidimensional assessment criteria in the SOMPA is aimed at assisting professionals in making nondiscriminatory classification/placement decisions about children, thus correcting for the overrepresentation of minority students in special education programs--specifically EMH classes. The multidimensionality of the SOMPA, a critical concept, had not been empirically assessed. Talley (1979) analyzed and compared the data from the California standardization sample of 2,085 subjects (CA 5-12 years) with the SOMPA results of 529 students (CA 5-11 years) referred for special education evaluation. Intercorrelations among SOMPA measures for both populations lend support to the claim of multidimensionality.

The "referred" sample was drawn from the Pueblo, Colorado, school distrct, previously cited by the Office of Civil Rights (OCR) for disproportionality of minority students in special education classes, i.e., overrepresentation in EMH and underrepresentation in LD placements. Talley (1979) reported that the year following the implementation of the SOMPA was the first year that no ethnic disproportionality was found in special education programs. In addition, shifts in staff utilization

had occurred. A decrease in EMH teachers and increases in hiring LD teachers and social workers were documented. A causal relationship between use of the SOMPA and proportional representation cannot be inferred. Factors such as teacher awareness, changes in criteria for placement, and modifications of the referral process in the Pueblo school district may have contributed to the outcome. The reader should note that only the prevalence, not the appropriateness, of special education placements was examined.

The focus of the second project was visual acuity assessment. Inadequate visual acuity can prevent normal academic development. Treatment of the most common visual impairments must be completed by age 6, the traditional age at which the majority of chidren are screened through school programs. Undiagnosed visual impairments compound the developmental problems of handicapped children. Visual screening of handicapped preschool children is imperative. No reported visual tests had established adequate validity and reliability with children below the age of 3 or with children considered untestable. Traditional visual acuity measures require responses to test stimuli that handicapped infants may not have developed.

Spellman, Cress, and Sizemore (1982) evaluated the use of the Parsons Visual Acuity Test (PVAT), used effectively with untestable school-age children and adults, with 470 preschool children (CA 18-48 months). The administration procedures for the PVAT include a pretest to determine the child's ability to discriminate test stimuli and to perform the appropriate responses. If necessary, subsequent training

using the principles of errorless learning is provided on discrimination and/or response tasks. Children who failed the pretest, following training, were not administered the PVAT. In this study, 416 (88.5%) of the subjects were successfully screened using the PVAT. Fewer younger children (CA 18-24 months) passed the pretest and subsequently were more difficult to train than older children.

Test-retest reliability (n = 30) and intertester (n = 31) agreement were determined by computing the percent of agreement on referral and nonreferral of subjects to an ophthalmologist. Professional eye examiners administered a test battery that included a cycloplegic retinoscopy examination to 347 children who had also completed the PVAT. Agreement between the two examinations for referral and nonreferral was 78%. This represented 4% underreferral and 18% overreferral by use of the PVAT. The authors evaluated the effects of changing the referral criterion from 20/40 to 20/60 to decrease the number of unconfirmed referrals. The change in criterion decreased overreferrals (8%) but increased underreferrals (10%). Although the authors preferred the modified criterion for referral, this decision must be evaluated in terms of the consequences for children who are in need of treatment and not referred.

The purpose of the third project was to adapt and validate the Kent Infant Development (KID) scale for use with severely handicapped children (Reuter, 1982). The KID scale is an instrument designed to measure 252 behaviors usually developed during the first year of life. The original test was developed for use with normal infants. The KID

scale is composed of five domains: cognitive, motor, social, language, and self-help. The inventory is completed by caregivers, i.e., residential staff, nurses, therapists, aides, teachers, and parents of the handicapped child. The KID scale can be used for the following purposes: (a) to assess the developmental status of young handicapped children, (b) to plan intervention programs, and (c) to evaluate the effects of stimulation programs.

Reuter (1982) and her colleagues described approximately 14 experiments conducted as part of this project. Several caregivers of approximately 120 severely/multiply handicapped children (CA 18-108 months) participated in most experiments. Due to the tremendous amount of information, the findings will be summarized in a list:

1. Interjudge reliability, test-retest (2 weeks and 12 months) reliability, and interitem reliability were established.

2. KID scale and Bayley Scales of Infant Development domain and raw scores are highly intercorrelated, exceeding .85, except for language and social domains (.78).

3. Mothers with high levels of education were more consistent in their responses than mothers with low levels of education.

4. Severely handicapped children accomplished developmental milestones in a sequence similar to that of normal infants. The handicapped children, however, moved through the sequence more slowly than normal children.

5. Consultants were able to develop goals for individual program plans (IPPs) from children's performances on the KID scale.

To summarize, five instruments were reviewed that were developed as part of the grant and three instruments were examined for their generalizability to different populations. Prior to these studies, no tests were available for measuring the same combination of content area, handicapping condition, and/or age range assessed by the project instruments. The majority of the subjects were identified as sensory, physically, and/or severely mentally handicapped.

A clear sense of purpose is essential in the area of assessment. A straightforward statement that tells the reader/user the kinds of decisions that can be made based on the assessment data derived from the instrument should be presented. Confusion of purpose was evident in a few of the final reports.

Throughout this review, many aspects of the studies were described. Some of the procedures incorporated into either the assessment process or research methods were particularly commendable. These procedures will be highlighted to serve as recommendations for future investigations.

1. Observations of behavior were conducted across a variety of settings, including free-play, small-group, and individual instruction (Evans & Voeltz, 1982).

2. Preschool handicapped children were pretested on their ability to discriminate test stimuli and to perform the appropriate response, before administration of the PVAT. Discrimination and/or response training were provided, when necessary, using principles of errorless learning and operant conditioning. This testing sequence increased the

probability that the child's score on PVAT was a valid measure of visual acuity (Spellman, Cress, & Sizemore, 1982).

3. Evidence of the utility of the PVAT as a screening instrument was provided by examining the relationship between referral decisions based on PVAT criteria and professional eye examinations. The potential outcomes of using the PVAT are reflected in the frequency of under-referrals and overreferrals (Spellman, Cress, & Sizemore, 1982).

Assessment decisions. Four studies will be presented in this subsection. The investigations focus on the use of assessment data in decision-making processes. Little overlap exists, however, among the research problems investigated or the methods used.

Coleman, Cook, and Meyers (1982) described a systematic procedure for selecting "candidate" communication devices that match the client's abilities, needs, and goals. The process involves making decisions through the interface of evaluation outcomes of the client and the augmentative communication devices. These sytematic procedures for decision making represent an alternative method to selecting an available system based on the child's ability to use it in an assessment setting, i.e., through a "shopping center" approach.

The authors described the use of the procedures in summaries of five case studies. The handicapped subjects varied in age, physical impairments, cognitive/language skills, and communication goals and needs. The case studies illustrated the kinds of tradeoffs that were made, e.g., trading increased technology for a more portable device, and how a combination of complementary devices form a total system.

The purpose of the second study was to determine the relative value of three types of assessment (graduated prompt vs. mediation vs. static) for preschool-age EMH and academic-at-risk children. The provision of graduated prompts and mediation are two methods of dynamic assessment ("Learning Potential," 1983).

In this experimental study, 60 subjects (CA 4-6 years) were randomly assigned to one of the three treatment conditions. Subjects completed a cognitive task using the appropriate method for the assigned condition. In the graduated prompt condition, the explicitness of hints or prompts was gradually increased each time the subject was unable to complete the task. In the mediation condition, teaching of principles and strategies needed for task completion was contingent upon the child's performance. In the static condition, assessment was conducted in the traditional manner wthout intervention. Following treatment, subjects independently completed a transfer task.

The results indicated that both methods of dynamic assessment facilitated subjects' demonstrations of learning potential not evident in static assessment. Mediation assisted generalization of learning from assessment to transfer tasks to a significantly greater degree than graduated prompt or traditional assessment, which did not differ from one another.

The researchers suggested that static and dynamic assessment procedures may be used in combination with intelligence tests to determine special education placements. A tentative model for making placement decisions was suggested.

The first purpose of Bullard's (1982) study was to compare the academic and behavioral characteristics of LD students who were mainstreamed and those who were not mainstreamed into academic classes. The groups consisted of 40 mainstreamed and 112 nonmainstreamed students in grades two through four. Minimal differences were found in reading, mathematics, and behavior between mainstreamed and nonmainstreamed subjects.

Interviews were conducted with 20 principals and 23 LD teachers to identify the factors that were the most important determinants for mainstreaming decisions. Although teachers and principals reported that studetns were not mainstreamed due to inadequate academic skills, over one-half of the nonmainstreamed LD subjects scored at or above grade level on basal placement tests in mathematics or reading. In addition, large numbers of these nonmainstreamed subjects also had appropriate levels of behavior.

Instruments used to measure achievement in academic areas may not be sensitive to differences that influenced placement decisions. Research is needed to determine if other student characteristics influence mainstream decisions or if school-related factors, e.g., class size or teacher availability, affect these decisions. The primary concerns, however, are the academic and social consequences of placement decisions for the students.

The goal of Sharp's (1983) project was to study factors that impacted on the education of handicapped Papago youth. The purpose of this survey study was to determine the perceptions of 47 administrators

and teachers toward screening, assessment, and placement of handicapped students by the use of interviews and questionnaires.

The majority of the responses addressed needs and problems in assessment and placement of handicapped students. Services for the handicapped were reported to be fragmented and uncoordinated both within and between programs on the Papago Reservation. The participants' responses reflected knowledge of Public Law 94-142 in terms of screening, assessment, and placement; however, basic problems in implementation were primary concerns.

In summary, the findings of several studies on assessment decisions offer exciting avenues for future research. Dynamic assessment procedures are currently the target of research investigations, professional training, and practice. Additional research is needed using both graduated prompts and mediation with handicapped populations. Development and validation of models for decision making on the basis of dynamic assessment have been suggested for both intervention and placement purposes.

Systematic procedures for matching characteristics of communication devices to the skills, needs, and goals of the handicapped client were investigated. Practitioners may use the assessment model and instruments in decision-making processes. Given the growth of communication technology and increased applications of technology for educational purposes, sytematic procedures may be used to match devices to the needs and skills of mildly to moderately handicapped children in the area of written communication.

Although level of academic skills was reported as the most important factor in placement decisions, minimal differences were found between mainstreamed and nonmainstreamed LD students. These results corroborate the findings of Minnesota's Institute of Research on Learning Disabilities. "Placement decisions made by teams of individuals have very little to do with data collected on students" (Ysseldyke et al., 1983, p. 78). The use of curriculum-based measurement was found to be effective in assisting teachers in making decisions about student performance (Ysseldyke et al., 1983).

The much needed research in LD should focus on data-based measurement, effective interventions, and making appropriate decisions about the effectiveness of instruction based on student performance data. Research on the components of effective instruction and efficacy studies of regular classroom versus special education classroom placements leads to the conclusion that the type of instruction is far more important than the setting in which that instruction occurs.

Assessment bias. Three projects were completed in the area of assessment bias. One project was a survey study, and the remaining projects were comprehensive reviews of the literature.

The purpose of the survey study was to examine the relationship between enrollment patterns of Hispanic students in special education and gifted programs and modifications made to ensure nondiscriminatory assessment (Mick & Staub, 1982). Additionally, the researchers investigated the enrollment patterns of Hispanic students of Cuban, Mexican, and Puerto Rican descent. Of the 157 questionnaires mailed to special

education administrators of local education agencies (LEAs), 101 (64%) were usable.

Contrary to previous investigations, the data revealed that the majority of the LEAs (62%) enrolled Hispanic and non-Hispanic students in special education (all exceptionalities, including speech) in proportional numbers, and to a somewhat lesser extent in programs for LD (61%) and EMH (61%) students. In support of past research, Hispanic students were found to be grossly underenrolled (63%) in gifted and talented programs.

In regard to accommodations made in assessment procedures, 95% of the LEAs made adaptations to ensure protection in evaluation for Hispanic students. The procedure used most frequently by 91% of the LEAs was the administration of a language-dominance or language-proficiency test.

Cross tabulations of the frequency of use of the 16 assessment procedures with the enrollment patterns of the LEAs were computed. Two of the assessment procedures that were statistically significant will be reported. LEAs that frequently used criterion-referenced measures were likely to have proportional enrollment of Hispanic LD students. More than half of the LEAs that "very seldom used" pluralistic assessment overenrolled students in EMH programs.

Rivera and Noboa (1982) completed a literature review on bilingual special education issues. The primary concerns regarding assessment were the sparsity of instruments appropriate for use with Hispanic students and the lack of tests that measure functional language proficiency

in first and second languages. Recommendations were made to meet these needs as well as to investigate the effectiveness of alternative assessment models. These authors expressed the need for data about the representation of Hispanics in handicapped classes, a need met in the previous investigation.

A comprehensive review of the literature on unbiased assessment was written by Kratochwill and Cancelli (1982). The two-volume work represents a significant contribution to the field of special education. The entire final report is impossible to review; however, a few of the most salient aspects will be presented.

According to the authors, assessment decisions are made for purposes of selection and intervention. The purpose of selection decisions is to choose among individuals those who will and those who will not succeed without intervention. The purpose of intervention decisions is to predict the effectiveness of a proposed treatment. Tests are selected that have utility for the intended purpose. Kratochwill and Cancelli (1982) recommended that research on the outcomes of assessment decisions be conducted. The purpose of the research would be to determine how well the test predicted the desired outcome for the individual.

Research on alternative models for assessment was presented by the authors. Behavioral assessment and criterion-referenced testing were the most highly developed procedures that can have immediate impact on planning interventions. The learning-potential approach is a dynamic assessment procedure that is designed to examine learning and strategies that facilitate the acquisition of new knowledge or skills. Kratochwill

and Cancelli (1982) reported that learning-potential assessment may hold promise as a diagnostic measure. Although learning-potential assessment is being used for planning interventions, the validity of its use for that purpose has not been established. Finally, the researchers viewed assessment for the purpose of classification as a superfluous activity and supported the movement toward noncategorical special education. "Noncategorical special education placement based on a child's needs rather than his classification will hopefully prove to be the next major change in providing help to children" (Kratochwill & Cancelli, 1982, p. 487).

To summarize, partial overlap was apparent in the findings and recommendations related to assessment bias. Rivera and Noboa (1982) recommended that alternative models of assessment be investigated. The research on assessment models was revieweed by Kratochwill and Cancelli (1982). Behavioral assessment and criterion-referenced testing were identified as the most promising models for immediate impact. Much research is needed on the learning-potential approach. Additional evidence is needed to support the use of this approach for instructional planning.

Training. Three studies were completed for training purposes. Brief comments will be made about two studies, and the third study will be reviewed. Three-day workshops were provided to 92 professionals at 10 sites on the administration of the PVAT, with heavy emphasis on practicum experience (Spellman, Cress, & Sizemore, 1982). Fifield (1983) provided in-service training to teachers and psychologists to

improve the educational relevance and utilization of the information contained in psychoeducational reports.

Haring, Liberty, and White (1981) trained 81 teachers and therapists who worked in a wide variety of settings to implement decision rules based on student performance data. The decision rules were designed to assist teachers in using appropriate interventions for aquisition, fluency, and compliance problems. Teachers were trained using one of the typical training models: handbook only, individual, small-group, or large-group instruction.

Following training, the participants were asked to adopt the decision rules for use with their students. The procedures were implemented by 31 teachers and therapists with 82 handicapped students (CA 1-29 years). At the end of the study, 19 teachers submitted performance data on 51 children. Teachers (n = 19) applied recommended procedures 68% of the time that remediation changes were made. Teachers who used recommended procedures had higher success rates than did those who used the recommended procedures less often. The predictive validity of the rules was correct 77.6% of the time. A determination could not be made as to which training model produced the greater impact on student performance.

Ysseldyke et al. (1983) reported findings similar to those of Haring et al. (1981) in training teachers to make educational decisions based on student performance data. Ysseldyke and his colleagues found the following:

1. Students make better progress when teachers follow systematic rules for data use than when they rely on judgment alone.

2. Teachers can be trained to be very proficient at measuring student performance. Training teachers to make educational decisions based on their evaluation of performance data has been less successful.

Policy issues. Few colleges have established programs for meeting the needs of LD college students. Most programs are found in junior colleges and less competitive 4-year colleges. Goldberg and Zern (1982) explored the characteristics, coping strategies, and barriers to learning of LD students attending a very selective university. Data on the 57 LD and 24 non-LD subjects were drawn from interviews, psycho-educational tests, and samples of college products. The researchers concluded that LD college students use learning strengths and compensatory strategies to meet the demands of college-level work. These LD students utilized university resources for academic assistance more than the non-LD subjects did.

Administrative arrangements currently used to provide assistance to LD college students include (a) special programs designed specifically for LD students, (b) academic assistance centers, and (c) short-term demonstration projects. Research is needed to determine the effectiveness of available resources and to investiage alternative models of service delivery.

Overall Summary and Conclusions

The research reviewed in this paper comprised studies selected from the final reports of assessment grants that were funded by SEP within a 5-year period. From the 18 projects, 62 research studies were generated, of which 32 were reported in detail. The implementation of these projects facilitated research training of graduate students, in-service training of personnel in special education and related service areas, and dissemination of information through publications and conference presentations.

The final reports selected for review were related only by the common theme of assessment. As such, the studies selected from the different final reports often addressed disparate topics. The difficulties encountered in synthesizing research with such a broad focus are outweighed by the valuable insights gained when research evidence from multiple orientations converges on similar findings. Also identified were interrelationships among current practices, published research, and this sample of studies funded by SEP.

Implications for research and practice will be presented together. The rationale for this joint presentation is two-pronged. First, elements that constitute quality assessment practices are also components of quality research. Second, the combined presentation represents a singular effort to diminish the unnecessary gap between research and practice. From each project, numerous avenues for research and implications for practice emerged. The recommendations included in this list are those that represent convergence in the area of assessment.

Implications for Research and Practice

1. The purpose of assessment must be clearly established in order to select, use, interpret, construct, or validate a method of measurement.

2. Prior to testing, the student must be capable of making the required test response (e.g., point, label, circle, read, write) when this response is being used only as a vehicle to indicate the presence or absence of the behavior that is being measured.

3. Measurement of the same behavior should occur across settings, times, and tasks when appropriate and possible.

4. The outcomes of asssessment decisions, whether emanating from practice or research, should be validated. (Funding Priority)

5. Criterion-referenced testing should be continued in practice and development. Areas in need of research include (a) systematic rules for making data-based decisions, (b) training models for teachers on data-based decision making, and (c) dissemination of data-use rules and effective training models. (Funding Priorities)

6. Research on alternative assessment models should be continued. Models that have the greatest potential for impact on the field of special education are behavioral assessment and learning-potential assessment. Research on the learning-potential approach should include graduated prompt and mediation methods. (Funding Priority)

7. Systematic assessment processes should be developed for selecting, from a range of available technologies, the system that is most appropriate for a student. A systematic approach includes assessment of

the student's needs, skills, and goals, identification of the critical components of available devices, and a decision-making procedure for matching the student and the device(s). Such procedures have potential use in many areas with mild to severely handicapped students. (Funding Priority)

8. The following recommendations are ones that might be considered by SEP: (a) continue funding student-initiated grants for 1-year periods; (b) field-initiated grants with longitudinal components in a funding priority area should be given preference; (c) develop an outline of components that are essential for inclusion in final reports.

> Measurement technologies ought to become integral parts of instruction, designed to make a difference in the lives of children and not just a prediction about their lives. (Reynolds, 1975)

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Kaplan, A. (1964). The conduct of inquiry: Methodology for behavioral science. New York: Harper & Row.

Reynolds, M. C. (1975). Trends in special education: Implications for measurement. In M. Reynolds & W. Hively (Eds.), Domain-referenced testing in special education. Minneapolis: University of Minnesota Leadership Institute/Special Education.

Salvia, J., & Ysseldyke, J. E. (1981). Assessment in special and remedial education (2nd ed.). Boston: Houghton Mifflin.

Ysseldyke, J. E., Thurlow, M., Graden, J., Wesson, C., Algozzine, B., & Deno, S. (1983). Generalizations from five years of research on assessment and decision making: The University of Minnesota Institute. Exceptional Education Quarterly, 4, 75-93.

Appendix A

Final Reports Reviewed: Assessment[1]

Bullard, J. K. (1982). Factors in mainstream decision making (USOE Grant No. G008101059).

Coleman, C. L., Cook, A. M., & Meyers, L. (1982). Enhancing the educational potential of non-oral children through matching communication device capabilities to children's needs (USOE Grant No. G007902261).

Evans, I. M., & Voeltz, L. M. (1982). The selection of intervention priorities in educational programming of severely handicapped preschool children with multiple behavioral problems (USOE Grant No. G007901960).

Fifield, M. Improving the utilization and educational relevance of individual psycho-educational assessment reports in the placement of and IEP development for handicapped Native American children (USOE Grant No. G008100322).

Goldberg, R. L., & Zern, D. S. (1982). Learning styles, learning abilities, and learning problems in college: An exploration of learning disabilities in college students (USOE Grant No. G008101035).

Haring, N. G., Liberty, K. A., & White, O. R. (1981). An investigation of phases of learning and facilitating instructional events for the severely/profoundly handicapped (USOE Grant No. G007500293).

[1]For student-initiated grants, the student was sytematically cited as the first author.

Kratochwill, T. R., & Cancelli, A. A. (1982). Nonbiased assessment in psychology and education (Vols. 1 & 2) (USOE Grant No. G008100160).

Learning potential assessment for preschool children. (1983). (USOE Grant No. G008201038).

Mick, D., & Staub, F. (1982). Representation of Hispanic students in special education and gifted programs in five states: A descriptive study (USOE Grant No. G008100031).

Reuter, J. (1982). Use of caregiver information to design habilitation programs for severely and profoundly handicapped young children (USOE Grant No. G008001794).

Rivera, K., & Noboa, A. (1982). State of the art in bilingual special education (USOE Grant No. G008100278).

Seibert, J. M. (1982). The relationship between sensorimotor development and communication in the young severely handicapped child (USOE Grant No. G007802091).

Sharp, E. Y. (1983). Analysis of determinants impacting on educational services of handicapped Papago students (USOE Grant No. G008101607).

Spellman, C. R., Cress, P. J., & Sizemore, A. C. (1982). Research and development of subjective visual acuity procedures for handicapped preschool children (USOE Grant No. G007901961).

Talley, R. C. (1979). Evaluating the effects of implementing the system of multicultural pluralistic assessment (USOE Grant No. G007800003).

Ulrich, D., & Wessel, J. A. (1983). Evaluation and revision of a motor screening instrument (USOE Grant No. G008000024).

Winnick, J. P., & Short, F. X. (1982). The physical fitness of sensory and orthopedically impaired youth (USOE Grant No. G007902258).

Witt, P. A., & Ellis, G. (1982). Development and validation of a standardized leisure diagnostic battery (LBD) to assess leisure functioning of handicapped children and youth (USOE Grant No. G007902257).

Appendix B

Assessment Research Coding Sheet

PROJECT ID#: _____ YEAR: _____

GRANT NO.: _____ GRANT PERIOD: _____ YEARS

PROGRAM AUTHORIZATION: _____ FIELD _____ STUDENT INITIATED RESEARCH

TITLE: _____

_____

AUTHOR(S): _____

INSTITUTION/AGENCY: _____

DISSEMINATION (Numbers):

Journal Articles: ___ Published ___ In Press ___ Submitted

Unpublished Manuscripts: ___ Available ___ In Preparation

Conference Presentations: ___ National/International

___ State/Local

NUMBER OF STUDIES:

Reported: _____

Reported in Detail: _____

STATED PURPOSE(S) OF PROJECT:

GENERAL NOTES:

PROJECT ID#: _____

STUDY: _____ OF _____

FOCUS OF PROJECT:

_____ Development of an assessment instrument
_____ Validation of an assessment instrument
_____ Assessment decisions
_____ Assessment bias
_____ Training
_____ Policy issues
_____ Other (i.e., _____)

ASSESSMENT PURPOSE:

_____ Screening/Referral
_____ Classification (Label)
_____ Program Placement (Setting)
_____ Instruction
_____ Program Evaluation
_____ Other (i.e., _____)

PROJECT DESIGN:

_____ Survey (Questionnaire/Interview)
_____ Case Study
_____ Correlational
_____ Quasi-Experimental
_____ Experimental
_____ Other (i.e., _____)

SUBJECTS:

Total Number: _____

NO.	TYPE	AGE RANGE	GRADE RANGE
_____	MR (mild/moderate/severe) .	_____	_____
_____	ED	_____	_____
_____	LD	_____	_____
_____	HI	_____	_____
_____	VI	_____	_____
_____	Sp/Lang.	_____	_____
_____	Phys. Hand.	_____	_____
_____	Multiply H. (_____) .	_____	_____
_____	Nonhandicapped	_____	_____
_____	Other (i.e., _____) .	_____	_____

WAS SUFFICIENT DETAIL PRESENTED TO ALLOW REPLICATION? Yes No

DID GRADUATE STUDENTS RECEIVE RESEARCH TRAINING THROUGH PROJECT? Yes No